Solutions-IES
Industrial & Environmental Services

1101 Nowell Rd. ■ Raleigh, NC 27607
(919) 873-1060 ■ Fax (919) 873-1074
www.solutions-ies.com

December 5, 2016

Mr. Terry Fox, L.G.
North Carolina Department of Transportation
Geotechnical Engineering Unit
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Reference: **Preliminary Site Assessment**
Bill and Maria Pappas Property (Parcel #124)
6261 Raeford Road
Fayetteville, Cumberland County, North Carolina
State Project: U-4405
WBS Element 39049.1.1
SIES Project No. 2016.0054.NDOT

Dear Mr. Fox:

Solutions-IES, Inc., (SIES) has completed the Preliminary Site Assessment conducted at the above-referenced property. The work was performed in accordance with the Technical and Cost proposal dated September 26, 2016, and the North Carolina Department of Transportation's (NCDOT's) Notice to Proceed dated September 26, 2016. Activities associated with the assessment consisted of conducting a geophysical investigation, collecting soil samples for analysis, and reviewing applicable North Carolina Department of Environmental Quality (NCDEQ) records. The purpose of this report is to document the field activities, present the laboratory analytical results, and provide recommendations regarding the property.

Location and Description

The Bill and Maria Pappas Property (Parcel #124) is located at 6261 Raeford Road in Fayetteville, Cumberland County, North Carolina. The property is situated on the south side of Raeford Road in the southeast quadrant of the intersection of Raeford Road and Bingham Drive (**Figure 1**). The site was a gas station and convenience store (Scotchman 38), and as of the date of the field work, Baldino's restaurant and sandwich shop occupied the building. Based on a review of on-line UST registry information, one underground storage tank (UST) was reportedly removed in 1984 and four USTs in 2002.

An asphalt parking area occupies the area in front of and to the west of the building and extends almost to the property boundaries. A concrete former dispenser island is located in the north-central area of the property and an asphalt patch immediately south of the former island suggests the area in which the

former USTs were located (**Figure 2**). The proposed easement has not been marked at the site, but NCDOT plan sheets show that the easement will not affect these areas or the building.

The NCDOT requested a Preliminary Site Assessment for the right-of-way and proposed easement because the site had been a gas station. The scope of work as defined in the Request for Technical and Cost Proposal was to evaluate the site with respect to the presence of known and unknown USTs and assess where contamination exists on the right-of-way/proposed easement. An estimate of the quantity of impacted soil was to be provided, should impacted soils be encountered.

SIES reviewed the on-line NCDENR Incident Management database and Incident Number 29017 was assigned to the site. A further review of files regarding the incident from the NCDEQ Fayetteville Regional Office indicated that in October 2002, four USTs were closed at the site. A UST Closure Report, dated November 18, 2002, described the closure of three 6,000-gallon gasoline USTs and one 4,000-gallon kerosene UST. The report also stated that a 550-gallon waste oil tank was removed in 1984, but no other information about that tank removal was given. The UST tank pit locations shown in the closure report are consistent with the site asphalt patching and confirm the USTs were south of the concrete pad. Confirmation soil samples were collected from below the dispensers, product lines, excavation sidewalls, and excavation bottom and analyzed for total petroleum hydrocarbons diesel and gasoline range organics (TPH DRO/GRO). Samples from below the dispensers, a product line, two sidewall samples, and five bottom samples contained DRO and GRO concentrations above the 2002 action level of 10 milligrams per kilogram (mg/kg). None of the soil samples collected were at locations within the proposed right-of-way or easement.

A Limited Site Assessment (LSA) was conducted at the site because the closure samples exceeded the action level. According to the March 18, 2003 LSA report, benzene was detected above the soil-to-groundwater Maximum Soil Contaminant Concentration (MSCC) in one soil sample. No other compounds were detected above applicable MSCCs in the other soil samples. Two groundwater monitoring wells were installed for the LSA; groundwater was encountered at 44 feet below ground surface (ft bgs). Analysis of the groundwater samples indicated that no volatile organic compounds were detected in either groundwater sample, but lead was detected slightly above the 15A NCA 2L Standards (NC 2L Standards). As a result of the LSA findings, the site was assigned a low risk classification with a residential land use. A No Further Action letter was not included in the file documents. As a convenience to the reader, relevant excerpts from the file documents are presented in **Attachment A** and the file reports are added to the end of this report.

SIES also examined the UST registration database to obtain UST ownership information. According to the database, the USTs on the property were operated under Facility Number 00-0-0000011379. The owner and operator of record for the tanks are listed as follows:

Owner
Worsley Companies, Inc.
PO Box 3227/10 S. Cardinal Dr.
Wilmington, NC 28406

Operator
Scotchman 38
6261 Raeford Road
Fayetteville, NC 28304

Geophysical Survey

Prior to SIES' mobilization to the site, Pyramid Environmental & Engineering of Greensboro, NC (Pyramid) conducted a geophysical survey to confirm the absence of known USTs in the right-of-way/proposed easement and determine if unknown USTs were present in that area. The geophysical survey consisted of an electromagnetic survey using a Geonics EM61 time-domain electromagnetic induction meter to locate buried metallic objects, and specifically looking for USTs.

A survey grid was laid out along the right-of-way/proposed easement with the X-axis oriented approximately parallel to Raeford Road and the Y-axis oriented approximately perpendicular to Raeford Road. The grid was positioned to cover the entire right-of-way/proposed easement.

The survey lines were spaced five feet apart and magnetic data were collected continuously along each survey line with a data logger. After collection, the data were reviewed in the field with graphical computer software.

Access was available to all areas of the property and several anomalies were detected with the geophysical survey. The anomalies were attributed to visible cultural features, metallic debris, underground utilities, or signage. No metallic USTs were detected within the geophysical survey area. Pyramid's detailed report of findings and interpretations is presented in **Attachment B**.

Site Assessment Activities

On October 25, 2016, SIES mobilized to the site to conduct a Geoprobe® direct-push investigation to evaluate subsurface soil conditions on the property. Five direct-push holes (124-SB-1 through 124-SB-5) were advanced throughout the right-of-way/proposed easement to a depth of 10 ft bgs. Boring locations are shown on the site map on **Figure 2.** The soil boring logs are included as **Attachment C**. Borings 124-SB-1 and 124-SB-2 were located to evaluate the subsurface conditions at drop inlet locations on the west side of the right-of-way/proposed easement. Borings 124-SB-3 through 124-SB-5 were located to assess the soil conditions on the northern right-of-way/easement (see photos in **Attachment D**).

Continuous sampling using a Geoprobe® resulted in generally good recovery of soil samples from the direct-push borings. Soil samples were collected and contained in four-foot long acetate sleeves inside the direct-push Macro-Core® sampler. Each of these sleeves was divided into two-foot long sections for soil sample screening. Soil from each two-foot interval was placed in a resealable plastic bag and the bag was set aside for volatilization of organic compounds from the soil to the bag headspace. A photoionization detector (PID) probe was inserted into the bag and the reading was recorded (**Table 1**).

If the PID concentrations in a boring were consistently low, one sample from the bottom interval was selected for analysis. If the PID concentrations were elevated, samples at the elevated and bottom intervals were selected for analyses. The PID results are summarized in Table 1.

The selected soil samples were submitted to an on-site mobile laboratory for analysis of total petroleum hydrocarbons (TPH) in the diesel range organics (DRO) and gasoline range organics (GRO) using ultraviolet fluorescence (UVF) methodology. Each boring was backfilled with bentonite and drill cuttings to the ground surface after completion.

The lithology encountered by the direct-push samples was generally consistent throughout the site. The ground surface was covered with about 0.5 feet of asphalt or topsoil. Below this surface cover was an light brown silty, fine-grained sand to a depth of about three ft bgs. Below this sand was a dark brown silty, fine-grained sand to a depth of about seven ft bgs. A dark brown clayey sand was observed at the bottom of most of the borings. No bedrock or groundwater was encountered in any of the borings.

According to the 1985 Geologic Map of North Carolina, the site is within of Coastal Plain Physiographic Province in North Carolina near the contact between the Cretaceous Black Creek and Middendorf Formations. The strata of the Black Creek Formation consist of gray to black clay, thin lenses of fine-grained sand and thick lenses of cross-bedded sand. The lithology may also include glauconite and fossils. In comparison, the Middendorf Formation consists of sand, sandstone, and mudstone that are laterally discontinuous. The soils observed at the site are consistent with the MIddendorf Formation as the parent material.

Analytical Results

The laboratory data are summarized in **Table 1** and the complete report is presented in **Attachment E**. Five soil samples were submitted for analysis. Two of these samples contained detectable GRO compounds at 0.7 and 1 mg/kg. Four of the samples contained detectable DRO compounds ranging from

0.15 to 12.7 mg/kg. The action levels are 50 mg/kg for GRO and 100 mg/kg for DRO[1]. None of the soil samples analyzed for this site contained DRO or GRO concentrations above their respective action levels.

Conclusions and Recommendations

A Preliminary Site Assessment was conducted to evaluate the Bill and Maria Pappas Property (Parcel #124) located at 6261 Raeford Road in Fayetteville, Cumberland County, North Carolina. Documents within the NCDEQ UST Section files indicated that a release had occurred at the site. Soil contamination was detected as part of a UST closure, but subsequent assessments determined only benzene was at a concentration above the soil-to-groundwater MSCC but below the residential MSCC, and one constituent, lead, was reported in groundwater samples at concentrations above the NC 2L Standard. Based upon the analytical results and the lack of receptors, the site was assigned a low risk classification and a residential land use. A No Further Action letter apparently has not been issued.

A geophysical survey conducted at the site indicated that no metallic USTs were present within the geophysical survey area of the site. Five soil borings were advanced to evaluate the subsurface soil conditions along the right-of-way/proposed easement. Two of the five soil samples analyzed had a GRO concentration above the detection limit, and DRO concentrations were present above the detection limit in four of the five soil samples. However, none of the DRO or GRO concentrations were above their respective action limit.

The UVF analytical results (**Table 1**) of the soil samples collected on October 25, 2016 indicate that none of the soil samples contained DRO or GRO concentrations above the action level. Therefore, no estimate of the volume of soil requiring possible remediation was made.

[1] NCDEQ, *Guidelines for North Carolina Action Limits for Total Petroleum Hydrocarbons (TPH)*,July 26, 2016,

SIES appreciates the opportunity to work with the NCDOT on this project. Because compounds were detected above the method detection limit in the soil samples, SIES recommends that a copy of this report be submitted to the Division of Waste Management, UST Section, in the Fayetteville Regional Office. If you have any questions, please contact us at (919) 873-1060.

Sincerely,

Michael W. Branson, P.G.
Project Manager

Attachments

John Palmer, P.G.
Senior Hydrogeologist

TABLE 1
SOIL FIELD SCREENING AND ANALYTICAL RESULTS
PAPPAS PROPERTY (PARCEL #124)
FAYETTEVILLE, CUMBERLAND COUNTY, NORTH CAROLINA
STATE PROJECT: U-4405
WBS ELEMENT 39049.1.1
SIES PROJECT NO. 2016.0054.NDOT

SAMPLE ID	DEPTH (ft)	PID READING (ppm)	SAMPLE ID	ANALYTICAL RESULTS (mg/kg)	
				UVF GRO	UVF DRO
	Action Level (mg/kg)			50	100
124-SB-1	0 - 2	0			
	2 - 4	0			
	4 - 6	0			
	6 - 8	1.2			
	8 - 10	1.6	124-SB-1-8-10	<0.63	**12.7**
124-SB-2	0 - 2	0			
	2 - 4	0			
	4 - 6	0			
	6 - 8	0.3			
	8 - 10	0.3	124-SB-2-8-10	<0.15	<0.15
124-SB-3	0 - 2	0			
	2 - 4	0.1			
	4 - 6	0			
	6 - 8	0.3			
	8 - 10	0.1	124-SB-3-8-10	<0.63	**1.4**
124-SB-4	0 - 2	0.2			
	2 - 4	1.0			
	4 - 6	0.3			
	6 - 8	0.6			
	8 - 10	0.6	124-SB-4-8-10	**1**	**0.15**
124-SB-5	0 - 2	0			
	2 - 4	0			
	4 - 6	0.1			
	6 - 8	0			
	8 - 10	0.2	124-SB-5-8-10	**0.7**	**1.8**

1) ft - feet

2) ppm - parts per million.

3) PID - photoionization ionization detector

4) mg/kg - milligrams per kilogram.

5) UVF DRO - Diesel range organics by UVF.

6) UVF GRO - Gasoline range organics by UVF.

7) Action level based upon NCDEQ memo *Guidelines for North Carolina Action Limits for Total Petroleum Hydrocarbons* - July 29, 2016.

8) Soil samples were collected on October 25, 2016.

9) **Bold** values are above the detection level.

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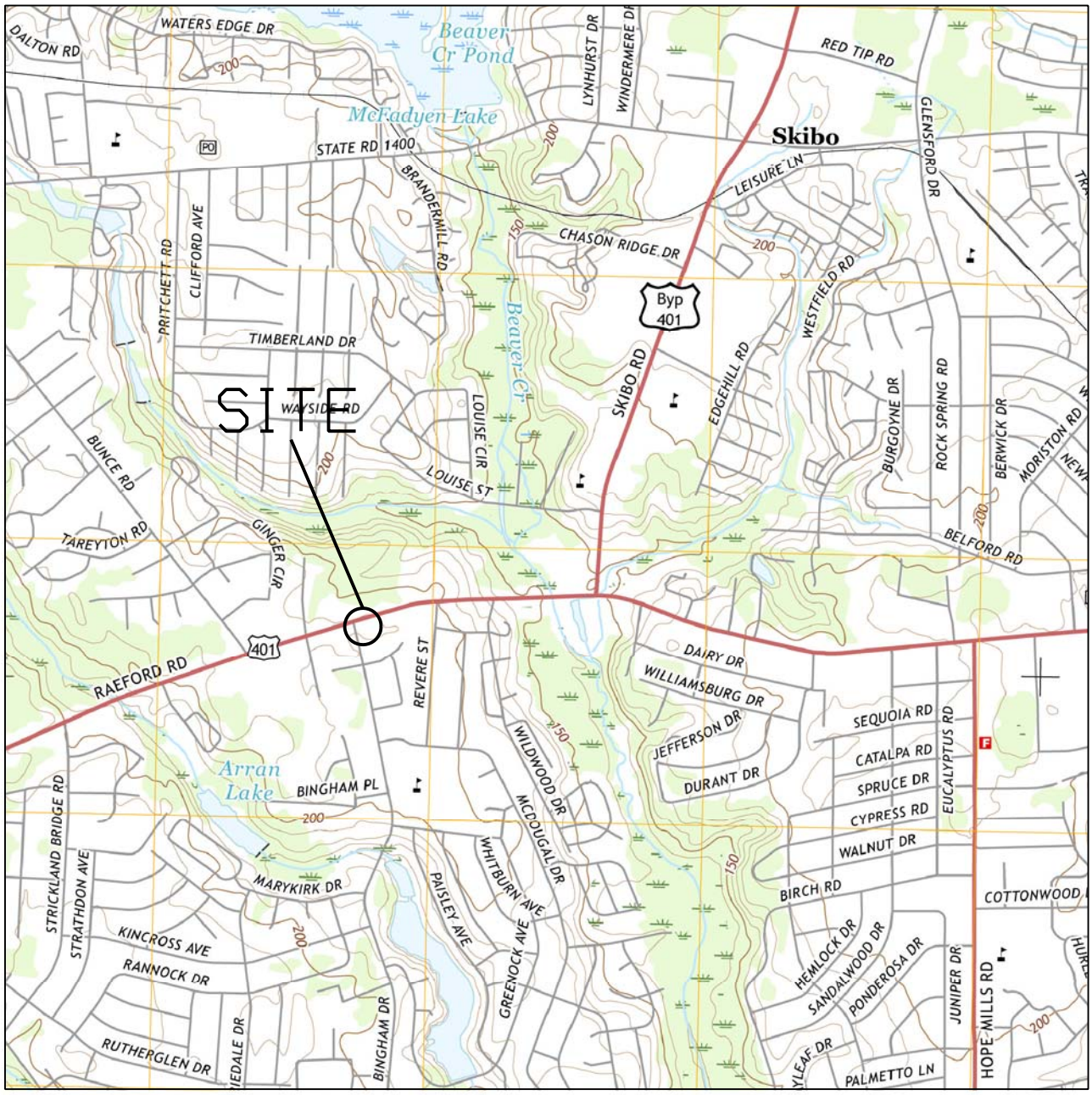
FIGURES



SCALE 1:24,000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

SOURCE: U.S. GEOLOGICAL SURVEY 7.5 MIN QUADRANGLE: FAYETTEVILLE, NC (2016)

FILE: FAYETTEVILLE PSAS
DATE: NOVEMBER 2016
PROJECT MANAGER: MWB
CHECKED BY: JEP
PROJECT NUMBER: 2016.0054.NDOT

Solutions-IES
Industrial & Environmental Services
1101 NOWELL ROAD
RALEIGH, NORTH CAROLINA 27607
TEL: (919) 873-1060 FAX: (919) 873-1074

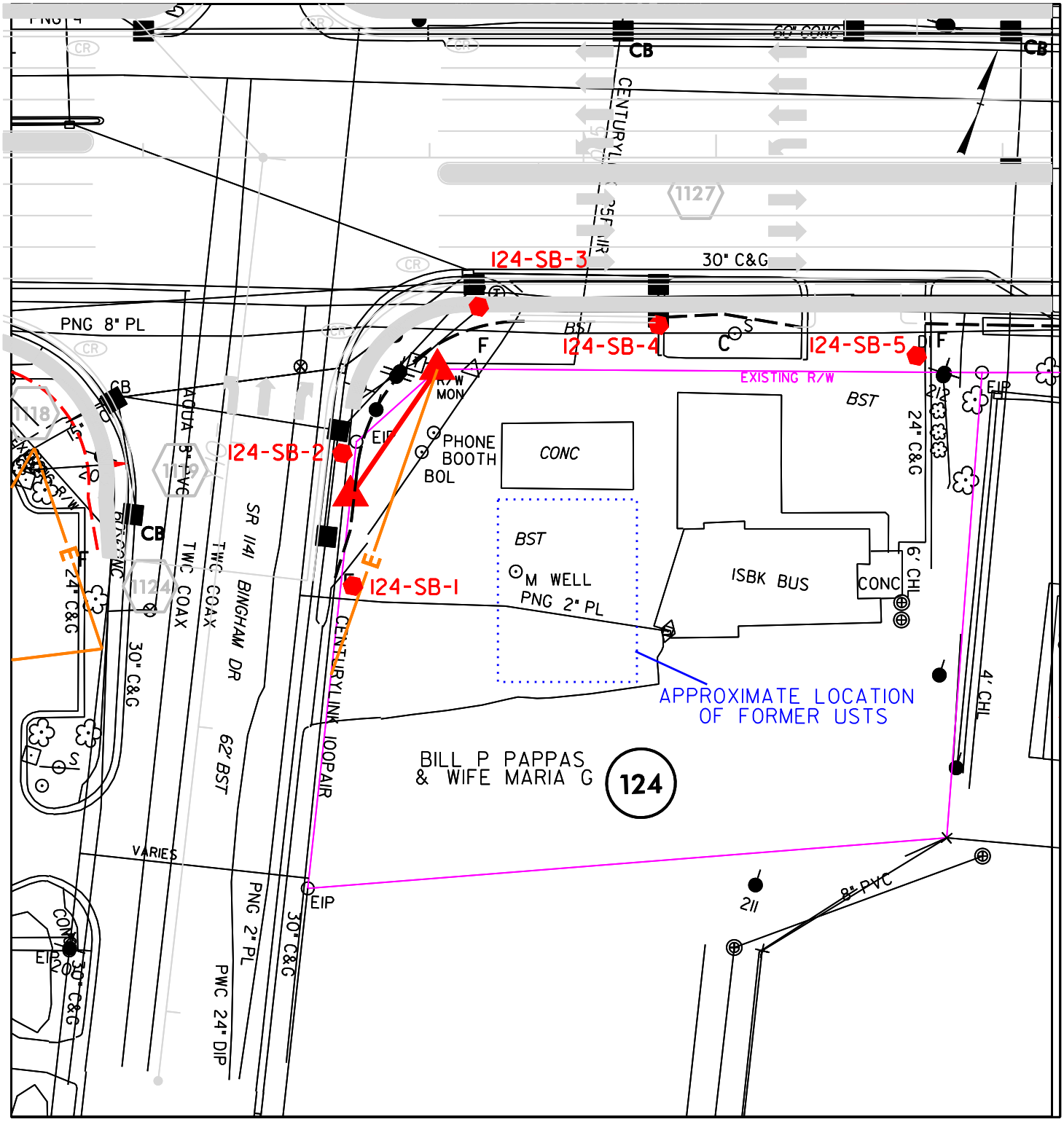
VICINITY MAP

PAPPAS PROPERTY (PARCEL #124)
FAYETTEVILLE, CUMBERLAND COUNTY NORTH CAROLINA

FIGURE 1

...\reports\FIGURES\124 FIG 1.dgn 10/5/2016 9:54:19 AM

PROJECT NUMBER 2016.0054.NDOT
MWB
DRAFTER
JEP
CHECKED BY
MWB
PROJECT MANAGER
NOVEMBER 2016
DATE
FAYETTEVILLE PSAS
FILE



LEGEND

124-SB-1

SOIL SAMPLE LOCATION AND IDENTIFICATION

0 25 50
GRAPHIC SCALE (FEET)

Solutions-IES
Industrial & Environmental Services
1101 NOWELL ROAD
RALEIGH, NORTH CAROLINA 27607
TEL: (919) 873-1060 FAX: (919) 873-1074

SITE MAP

PAPPAS PROPERTY (PARCEL #124)

FAYETTEVILLE, CUMBERLAND COUNTY, NORTH CAROLINA

FIGURE 2

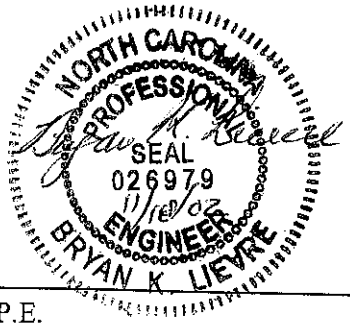
ATTACHMENT A

UNDERGROUND STORAGE TANK CLOSURE REPORT
SCOTCHMAN #38
6261 RAEFORD ROAD
FAYETTEVILLE, NORTH CAROLINA
NOVEMBER 18, 2002

Facility ID:	0-011379
Property Owner:	Worsley Companies, Inc P.O. Box 3227 Wilmington, NC 28406 (910) 395-5300
UST Owner:	Worsley Companies, Inc P.O. Box 3227 Wilmington, NC 28406 (910) 395-5300
Release Information:	Discovery date: October 24, 2002 Cause of release: UST System Source: UST System consisting of 1-4,000 gallon kerosene and 3-6,000 gallon gasoline USTs.
Latitude: Longitude:	35° 04' 27" N 79° 28' 53" W

Prepared for:
Worsley Companies, Inc.
P.O. Box 3227
Wilmington, NC 28406
(910) 395-5300

Prepared By:
Delta Environmental Consultants, Inc.
3205 Randall Parkway, Suite 104
Wilmington, NC 28406
(910) 772-6492



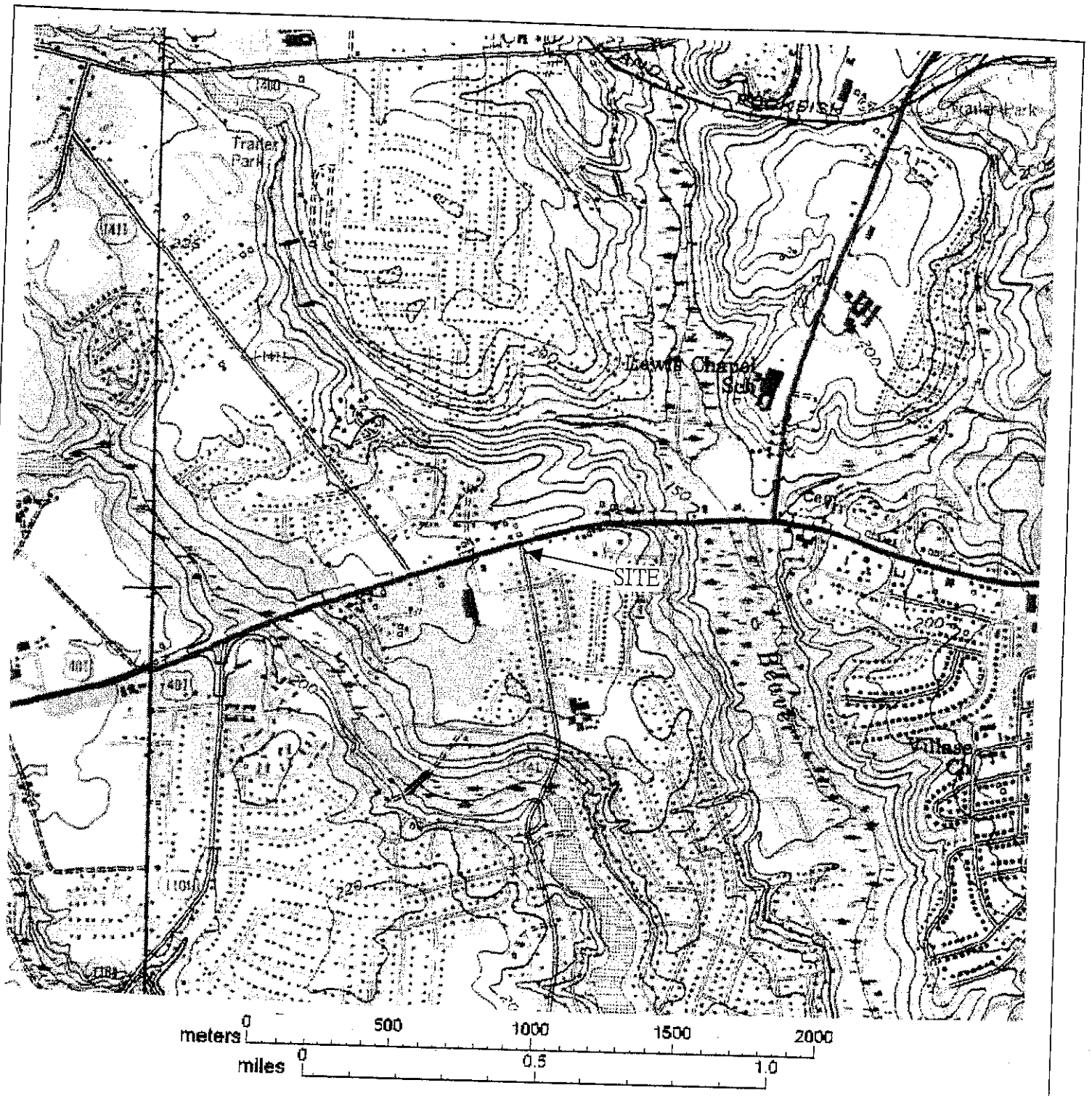
Bryan K. Lievre, P.E.
North Carolina Professional Engineer
No. 026979

TABLE 1
SOIL ANALYTICAL RESULTS
UST CLOSURE
SCOTCHMAN #38
FAYETTEVILLE, NORTH CAROLINA
DELTA PROJECT NO. X0NC-057

Sample ID	Sample Date	Sample Depth (ft. bgs)	TPH-GRO (EPA 5030) (mg/kg)	TPH-DRO (EPA 3550) (mg/kg)
D-1	10/23/2002	1.5	**1,800**	**3,010**
D-2	10/23/2002	1.5	**4,000**	**4,220**
PL-1	10/23/2002	2	<6.7	**26**
SW-1	10/23/2002	4	<6.6	<6.8
SW-2	10/23/2002	4	<6.9	<7.2
SW-3	10/23/2002	4	<7.1	<7.4
SW-4	10/23/2002	4	<6.6	<6.5
SW-5	10/23/2002	4	<6.3	<6.2
SW-6	10/24/2002	4	<6.9	<7.2
SW-7	10/24/2002	4	<6.5	<6.3
SW-8	10/24/2002	3.5	<6.4	7.0
SW-9	10/24/2002	3.5	<6.6	<6.9
SW-10	10/24/2002	3.5	<6.5	<6.7
SW-11	10/24/2002	4	**51**	**567**
SW-12	10/24/2002	4	**10**	**51**
SW-13	10/24/2002	3.5	<6.7	<6.9
SW-14	10/24/2002	3.5	<6.7	<7.0
SW-15	10/24/2002	4	<6.7	<7.0
B-1	10/23/2002	9	<6.6	<6.6
B-2	10/23/2002	9	<6.7	<7.3
B-3	10/23/2002	9	<6.7	<6.8
B-4	10/24/2002	7	<7.0	<7.6
B-5	10/24/2002	7	<7.0	<6.5
B-6	10/24/2002	7	<7.0	<7.1
B-7	10/24/2002	7	<6.9	<7.0
B-8	10/24/2002	7	**700**	**2,380**
B-9	10/24/2002	7	**1,900**	**1,620**
B-10	10/24/2002	7	**210**	**840**
B-11	10/24/2002	7	**850**	**1,000**
B-12	10/24/2002	7	**1,200**	**1,990**
NC Action Levels			**10**	**10**

Notes:

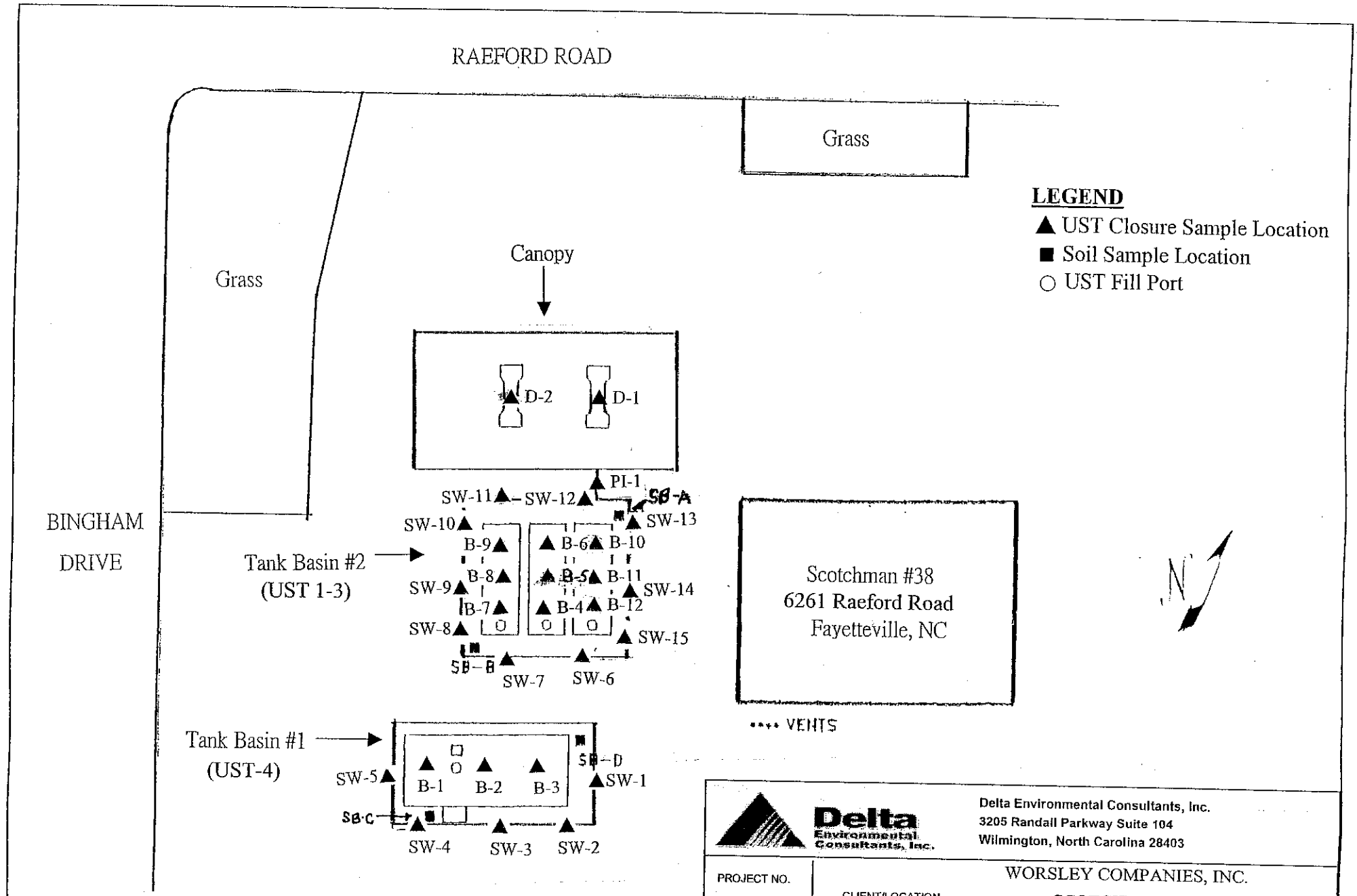
1) *ft. bgs. denotes feet below ground surface*
2) *mg/kg denotes milligrams per kilogram*
3) *All results in **BOLD** exceed Action Levels*
4) *TPH-GRO denotes Total Petroleum Hydrocarbons-Gasoline Range Organic*
5) *TPH-DRO denotes Total Petroleum Hydrocarbons-Diesel Range Organics*



FAYETTEVILLE QUADRANGLE
NORTH CAROLINA
7.5 MINUTE TOPOGRAPHIC SERIES

Delta Environmental Consultants, Inc.
3205 Randall Parkway Suite 104
Wilmington, North Carolina 28403

PROJECT NO. X0NC-057	CLIENT/LOCATION WORSLEY COMPANIES, INC. SCOTCHMAN #38 FAYETTEVILLE, NORTH CAROLINA	
PROJECT MANAGER B. Lievre	FIGURE NO.	DRAWING DESCRIPTION
DATE 11/21/02	1	SITE VICINITY MAP



Delta Environmental Consultants, Inc.
3205 Randall Parkway Suite 104
Wilmington, North Carolina 28403

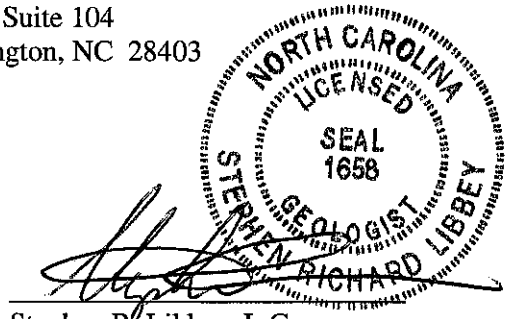
PROJECT NO. X0NC-057	CLIENT/LOCATION	WORSLEY COMPANIES, INC. SCOTCHMAN #38 FAYETTEVILLE, NORTH CAROLINA
PROJECT MANAGER B.LIEVRE	FIGURE NO. 2	DRAWING DESCRIPTION SITE MAP
DATE 11/21/02		

PHASE II LIMITED SITE ASSESSMENT
SCOTCHMAN #38
6261 RAEFORD ROAD
FAYETTEVILLE, NORTH CAROLINA
MARCH 2003

Facility ID:	0-011379
Property Owner:	Worsley Companies, Inc. P.O. Box 3227 10 S. Cardinal Drive Wilmington, NC 2840
UST Owner (at time of release):	Worsley Companies, Inc. P.O. Box 3227 10 S. Cardinal Drive Wilmington, NC 28406 (910) 395-5300
Release Information:	Discovery Date: October 24, 2002, estimated quantity unknown. Cause of Release: UST system consisting of 1-4,000 gallon kerosene and 3-6,000 gallon gasoline USTs.
Latitude: Longitude:	35° 04' 27" N 79° 28' 53" W

Prepared for:
Worsley Companies, Inc.
P.O. Box 3227
Wilmington, NC 28406

Prepared by:
Delta Environmental Consultants, Inc.
3205 Randall Parkway
Suite 104
Wilmington, NC 28403



03/18/03

Stephen R. Libbey, L.G.
North Carolina Professional Geologist No. 1658

TABLE 1
SOIL ANALYTICAL RESULTS
UST CLOSURE
SCOTCHMAN #38
FAYETTEVILLE, NORTH CAROLINA
DELTA PROJECT NO. X0NC-057

Sample ID	Sample Date	Sample Depth (ft. bgs)	TPH-GRO (EPA 5030) (mg/kg)	TPH-DRO (EPA 3550) (mg/kg)
D-1	10/23/2002	1.5	**1,800**	**3,010**
D-2	10/23/2002	1.5	**4,000**	**4,220**
PL-1	10/23/2002	2	<6.7	**26**
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SW-2	10/23/2002	4	<6.9	<7.2
SW-3	10/23/2002	4	<7.1	<7.4
SW-4	10/23/2002	4	<6.6	<6.5
SW-5	10/23/2002	4	<6.3	<6.2
SW-6	10/24/2002	4	<6.9	<7.2
SW-7	10/24/2002	4	<6.5	<6.3
SW-8	10/24/2002	3.5	<6.4	7.0
SW-9	10/24/2002	3.5	<6.6	<6.9
SW-10	10/24/2002	3.5	<6.5	<6.7
SW-11	10/24/2002	4	**51**	**567**
SW-12	10/24/2002	4	**10**	**51**
SW-13	10/24/2002	3.5	<6.7	<6.9
SW-14	10/24/2002	3.5	<6.7	<7.0
SW-15	10/24/2002	4	<6.7	<7.0
B-1	10/23/2002	9	<6.6	<6.6
B-2	10/23/2002	9	<6.7	<7.3
B-3	10/23/2002	9	<6.7	<6.8
B-4	10/24/2002	7	<7.0	<7.6
B-5	10/24/2002	7	<7.0	<6.5
B-6	10/24/2002	7	<7.0	<7.1
B-7	10/24/2002	7	<6.9	<7.0
B-8	10/24/2002	7	**700**	**2,380**
B-9	10/24/2002	7	**1,900**	**1,620**
B-10	10/24/2002	7	**210**	**840**
B-11	10/24/2002	7	**850**	**1,000**
B-12	10/24/2002	7	**1,200**	**1,990**
NC Action Levels			**10**	**10**

Notes:

1) *ft. bgs. denotes feet below ground surface*
2) *mg/kg denotes milligrams per kilogram*
3) *All results in **BOLD** exceed Action Levels*
4) *TPH-GRO denotes Total Petroleum Hydrocarbons-Gasoline Range Organi*
5) *TPH-DRO denotes Total Petroleum Hydrocarbons-Diesel Range Organics*

TABLE 2
SOIL ANALYTICAL RESULTS
Scotchman #3
Fayetteville, North Carolina
Delta Project No. X0NC-057

Sample ID	MW-1 (2.5-3.0')	MW-1 (8.0-8.5')	MW-1 (13.0-13.5')	MW-1 (17.0-17.5')	MW-1 (25.0-25.5')	MW-1 (35.0-35.5')	
Sample Date	1/9/2003	1/9/2003	1/9/2003	1/9/2003	1/9/2003	1/9/2003	
Sample Depth (feet)	2.5-3.0	8.0-8.5	13.0-13.5	17.0-17.5	25.0-25.5	35.0-35.5	
PID (ppm)	NA	NA	NA	NA	NA	NA	
Analyses	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	*Soil-to-Water MSCC ug/Kg*
Target Compounds	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	
BENZENE	**20**	**<5.8**	<5.5	<5.2	<5.6	<5.6	5.6
TOLUENE	12	<5.8	<5.5	<5.2	<5.6	<5.6	7,000
ETHYLBENZENE	16	<5.8	<5.5	<5.2	<5.6	<5.6	240
XYLENES	52.5	<17.8	<17.5	<15.2	<16.6	<16.6	5,000
1,2,3-TRICHLOROPROPANE	24	<5.8	<5.5	<5.2	<5.6	<5.6	NG
1,3,5-TRIMETHYLBENZENE	<5.7	<5.8	<5.5	<5.2	<5.6	<5.6	7,000
1,2,4-TRIMETHYLBENZENE	15	<5.8	<5.5	<5.2	<5.6	<5.6	8,000
DIISOPROPYL ETHER (DIPE)	<5.7	<5.8	<5.5	<5.2	<5.6	<5.6	370
1.2-DIBROMETHANE (EDB)	<5.7	<5.8	<5.5	<5.2	<5.6	<5.6	0.00197
METHYL-TERT-BUTYL ETHER (MTBE)	**16**	<5.8	<5.5	<5.2	<5.6	<5.6	920
NAPHTHALENE	<5.7	<5.8	<5.5	<5.2	<5.6	<5.6	580
C5-C8 ALIPHATICS	<10	<10	<10	<10	<10	<10	72,000
C9-C12 ALIPHATICS	<10	<10	<10	<10	<10	<10	3,255,000
C9-C10 AROMATICS	<10	<10	<10	<10	<10	<10	34,000

Notes:
PID -Photo-Ionization Detector
PPM - Parts Per Million
ug/Kg - Micrograms per Kilogram (or approximately parts per billion)
Bold Numbers indicate values exceeding the soil-to-groundwater maximum contaminant concentrations
NG - No value given
No other compounds were detected above quantification limits.

TABLE 2
SOIL ANALYTICAL RESULTS
Scotchman #3
Fayetteville, North Carolina
Delta Project No. X0NC-057

Sample ID	MW-1 (43.5-44.0')	MW-2 (11.5-12.0')	MW-2 (14.5-15.0')	MW-2 (21.0-21.5')	MW-2 (27.0-27.5')	MW-2 (38.0-38.5')	
Sample Date	1/9/2003	1/9/2003	1/9/2003	1/9/2003	1/9/2003	1/9/2003	
Sample Depth (feet)	43.5-44.0	11.5-12.0	14.5-15.0	21.0-21.5	27.0-27.5	38.0-38.5	
PID (ppm)	NA	NA	NA	NA	NA	NA	
Analyses	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	
Target Compounds	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	*Soil-to-Water MSCC ug/Kg*
BENZENE	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	5.6
TOLUENE	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	7,000
ETHYLBENZENE	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	240
XYLENES	<16.5	<16.7	<16.3	<16.6	<16.7	<16.5	5,000
1,2,3-TRICHLOROPROPANE	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	NG
1,3,5-TRIMETHYLBENZENE	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	7,000
1,2,4-TRIMETHYLBENZENE	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	8,000
DIISOPROPYL ETHER (DIPE)	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	370
1.2-DIBROMETHANE (EDB)	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	0.00197
METHYL-TERT-BUTYL ETHER (MTBE)	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	920
NAPHTHALENE	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	580
C5-C8 ALIPHATICS	<10	<10	<10	<10	<10	<10	72,000
C9-C12 ALIPHATICS	<10	<10	<10	<10	<10	<10	3,255,000
C9-C10 AROMATICS	<10	<10	<10	<10	<10	<10	34,000

Notes:
PID -Photo-Ionization Detector
PPM - Parts Per Million
ug/Kg - Micrograms per Kilogram (or approximatly parts per billion)
Bold Numbers indicate values exceeding the soil-to-groundwater maximum contaminant concentrations
NG - No value given
No other compounds were detected above quantification limits.

TABLE 3
WATER LEVEL DATA
Scotchman #38
Fayetteville, North Carolina
Delta Project No. X0NC-057

WELL ID	SCREENED INTERVAL (ft bgs)	TOC ELEVATION (ft)	DATE MEASURED	DEPTH TO WATER (ft)
MW-1	35-55	NA	2/10/2003	44.71
MW-2	35-55	NA	2/10/2003	44.48

Notes:
ft bgs- feet below ground surface.
Depth to water is measured from top of well casing TOC.
NA - Not Applicable

TABLE 4
GROUNDWATER ANALYTICAL RESULTS
SCOTCHMAN #38
FAYETTEVILLE, NORTH CAROLINA
DELTA PROJECT NO. X0NC-057

Sample ID	MW-1	MW-2	
Sample Date	2/10/2003	2/10/2003	
Analyses	EPA Methods 601/602, 504.1, 3030C, & MADEP-VPH.	EPA Methods 601/602, 504.1, 3030C, & MADEP-VPH.	*2L Groundwater Quality Standards*
Target Compounds	Compound Concentrations (ug/L)	Compound Concentrations (ug/L)	
Benzene	<1	<1	1
Toluene	<1	<1	1,000
Ethylbenzene	<1	<1	29
Xylenes	<4	<4	530
Methyl-tert-btyl-ether	3.6	3.7	200
Diisopropyl ether	<1	<1	70
Ethylene Dibromide	<0.02	<0.02	0.0004
Lead	**44.0**	**24.1**	15
C5-C8 Aliphatics	<100	<100	420
C9-C12 Aliphatics	<100	<100	4,200
C9-C10 Aromatics	<100	<100	210

Notes:

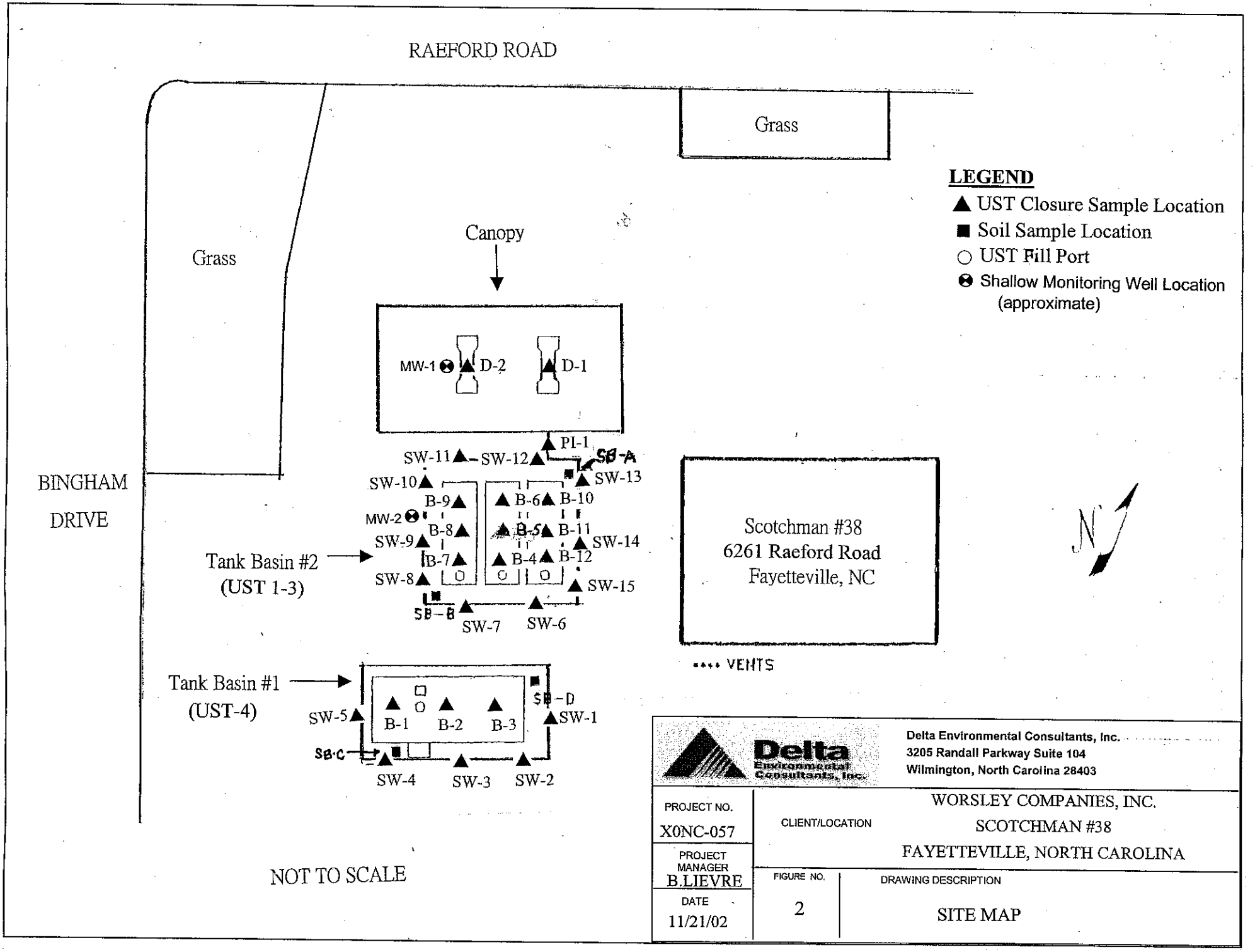
*1) **Bold** Numbers indicate values exceeding 2L groundwater standards.*

2) ug/L denotes micrograms per liter (or approximatly parts per billion).

FAYETTEVILLE QUADRANGLE
NORTH CAROLINA
7.5 MINUTE TOPOGRAPHIC SERIES

Delta Environmental Consultants, Inc.
3205 Randall Parkway Suite 104
Wilmington, North Carolina 28403

PROJECT NO. X0NC-057	CLIENT/LOCATION WORSLEY COMPANIES, INC. SCOTCHMAN #38 FAYETTEVILLE, NORTH CAROLINA
PROJECT MANAGER B. Lievre	FIGURE NO. 1
DATE 11/21/02	DRAWING DESCRIPTION SITE VICINITY MAP



Delta Environmental Consultants, Inc.

Delta Environmental Consultants, Inc.
3205 Randall Parkway Suite 104
Wilmington, North Carolina 28403

PROJECT NO. X0NC-057	CLIENT/LOCATION	WORSLEY COMPANIES, INC. SCOTCHMAN #38 FAYETTEVILLE, NORTH CAROLINA
PROJECT MANAGER B.LIEVRE	FIGURE NO. 2	DRAWING DESCRIPTION SITE MAP
DATE 11/21/02		

5r

North Carolina
Department of Environment and Natural Resources
Division of Waste Management
Underground Storage Tank Section
Fayetteville Regional Office

Michael F. Easley, Governor
William G. Ross Jr, Secretary
Dexter R. Matthews, Director

May 28, 2003

Mr. Don Quinn
Worsley Companies, Inc.
P.O. Box 3227
Wilmington, NC 28406

Re: Notice of Regulatory Requirements
5A NCAC 2L .0115(d)
Risk-based Assessment and Corrective Action for Petroleum Underground Storage Tanks
Scotchman #38
6261 Raeford Road
Fayetteville, Cumberland County
Incident # 29017
Low Risk Classification / Residential Land Use

Dear Mr. Quinn:

Information received by this office on March 24, 2003 confirmed a release or discharge from a petroleum underground storage tank (UST) system at the above-referenced site. Records indicate that Worsley Companies, Inc., is the responsible party for this release or discharge. This letter is a standard notice explaining the actions you must take as a result of the release or discharge in accordance with North Carolina statutes and rules. The UST Section of the Division of Waste Management administers the state's rules for USTs and the required response for petroleum releases. Those rules are located in Title 15A, Subchapter 2L and Title 15A, Subchapter 2N of the North Carolina Administrative Code (NCAC).

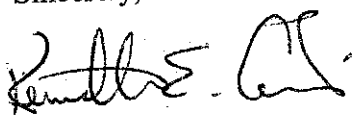
The risk-based rule for petroleum USTs, 15A NCAC 2L .0115(d), states that the Department shall classify the risk of each known discharge or release from the UST system. A review of the Limited Site Assessment prepared for the referenced incident and received on March 24, 2003, indicates that:

(1) The risk posed does not fall within the high or intermediate risk categories; and

(2) After review of site-specific information, limited assessment, or interim corrective action, the discharge or release poses no significant risk to human health or the environment.

If you have any questions regarding the actions that must be taken or the rules mentioned in this letter, please contact me at the letterhead address or at (910) 486-1541. If you have any questions regarding trust fund eligibility or reimbursement, please contact the UST Section Trust Fund Branch at (919) 733-8486.

Sincerely,



Kenneth E. Currie
UST Section

c: FRO Incident Management Files

ATTACHMENT B

Pyramid Geophysics

PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2016-265)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 124 – BILL AND MARIA PAPPAS
NCDOT PROJECT U-4405

6261 RAEFORD RD., FAYETTEVILLE, CUMBERLAND COUNTY, NC

NOVEMBER 4, 2016

Report prepared for: **Mike Branson**
Solutions, IES
1101 Nowell Road
Raleigh, North Carolina 27607

Prepared by: _____
Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____
Douglas A. Canavello, P.G.
NC License #1066

503 INDUSTRIAL AVENUE, GREENSBORO, NC 27406
P: 336.335.3174 F: 336.691.0648
C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 124 – 6261 Raeford Road
Fayetteville, Cumberland County, North Carolina

Table of Contents

Figures

LIST OF ACRONYMS

CADD	Computer Assisted Drafting and Design
DF	Dual Frequency
EM	Electromagnetic
GPR	Ground Penetrating Radar
GPS	Global Positioning System
NCDOT	North Carolina Department of Transportation
ROW	Right-of-Way
SVE	Soil Vapor Extraction
UST	Underground Storage Tank

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Solutions, IES (Solutions) at Parcel 124, located at 6261 Raeford Road, Fayetteville, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-4405). Solutions directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to extend from the existing edge of pavement to the proposed ROW lines and/or easement lines within the property, whichever distance was greater. Conducted from October 12-17, 2016, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Geophysical Results: All EM anomalies were directly attributed to visible cultural features and known utilities. A GPR survey was not required. Collectively, the geophysical data did not show any evidence of unknown metallic USTs at Parcel 124.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Solutions, IES (Solutions) at Parcel 124, located at 6261 Raeford Road, Fayetteville, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-4405). Solutions directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to extend from the existing edge of pavement to the proposed ROW lines and/or easement lines within the property, whichever distance was greater. Conducted from October 12-17, 2016, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included an active restaurant building surrounded by asphalt parking areas and grass medians. Aerial photographs showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

The geophysical investigation consisted of an electromagnetic (EM) induction-metal detection survey. Pyramid collected the EM data using a Geonics EM61 metal detector integrated with a Trimble AG-114 GPS antenna. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. The EM61 data were digitally collected at approximately 0.8 foot intervals along north-south trending or east-west trending, generally

parallel survey lines spaced five feet apart. The data were downloaded to a computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 11.0 software programs.

GPR data were not required at this property due to all EM anomalies being directly attributed to visible cultural features at the ground surface or known utilities (see Discussion of Results below).

Pyramid's classifications of USTs for the purposes of this report are based directly on the geophysical UST ratings provided by the NCDOT. These ratings are as follows:

Geophysical Surveys for Underground Storage Tanks
on NCDOT Projects

High Confidence	Intermediate Confidence	Low Confidence	No Confidence
Known UST Active tank - spatial location, orientation, and approximate depth determined by geophysics.	**Probable UST** Sufficient geophysical data from both magnetic and radar surveys that is characteristic of a tank. Interpretation may be supported by physical evidence such as fill/vent pipe, metal cover plate, asphalt/concrete patch, etc.	**Possible UST** Sufficient geophysical data from either magnetic or radar surveys that is characteristic of a tank. Additional data is not sufficient enough to confirm or deny the presence of a UST.	Anomaly noted but not characteristic of a UST. Should be noted in the text and may be called out in the figures at the geophysicist's discretion.

DISCUSSION OF RESULTS

Discussion of EM Results

A contour plot of the EM61 results obtained across the survey area at the property is presented in **Figure 2**. Each EM anomaly is numbered for reference in the figure. The following table presents the list of EM anomalies and the cause of the metallic response, if known:

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Suspected Water Line	
2	Sign/Gas Cover	
3	Phone Booth	
4	Signs/Posts	
5	Storm Drains	

All of the EM anomalies recorded by the survey are directly attributed to visible cultural features such as signs, posts, a phone booth, and storm drains. One east/west oriented anomaly on the north portion of the survey area was associated with a buried water line. For this reason, a GPR survey was not required to verify any unknown anomalies.

Collectively, the geophysical data did not show any evidence of unknown metallic USTs at Parcel 124.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 data collected at Parcel 124 in Fayetteville, Cumberland County, North Carolina, provides the following summary and conclusions:

- The EM61 survey provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- All EM anomalies were directly attributed to visible cultural features and known utilities. A GPR survey was not required.
- Collectively, the geophysical data did not show any evidence of unknown metallic USTs at Parcel 124.

LIMITATIONS

Geophysical surveys have been performed and this report was prepared for Solutions, IES in accordance with generally accepted guidelines for EM61 surveys. It is generally recognized that the results of the EM61 surveys are non-unique and may not represent actual subsurface conditions. The EM61 results obtained for this project have not conclusively determined the definitive presence or absence of metallic USTs, but the evidence collected is sufficient to result in the conclusions made in this report. Additionally, it should be understood that areas containing extensive vegetation, reinforced concrete, or other restrictions to the accessibility of the geophysical instruments could not be fully investigated.

N↑

APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA

View of Survey Area
(Facing Approximately East)

View of Survey Area
(Facing Approximately North)

TITLE
PARCEL 124 - GEOPHYSICAL SURVEY
BOUNDARIES AND SITE PHOTOGRAPHS

PROJECT
6261 RAEFORD ROAD
FAYETTEVILLE, NORTH CAROLINA
NCDOT PROJECT U-4405

Pyramid Geophysics
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE	10/31/16	CLIENT	SOLUTIONS, IES
PYRAMID PROJECT #:	2016-265		**FIGURE 1**

N↑

EM61 METAL DETECTION RESULTS

NUMBERS IN BLUE (x) CORRESPOND TO ANOMALY TABLE INCLUDED IN THE REPORT

NO EVIDENCE OF UNKNOWN METALLIC USTs OBSERVED

The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM61 data were collected on October 12, 2016, using a Geonics EM61 instrument. GPR verification data were not required due to all EM anomalies being directly attributed to visible cultural features.

EM61 Metal Detection Response (millivolts)

TITLE	PARCEL 124 - EM61 RESULTS CONTOUR MAP
PROJECT	6261 RAEFORD ROAD FAYETTEVILLE, NORTH CAROLINA NCDOT PROJECT U-4405

Pyramid Geophysics

503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE	10/26/2016	CLIENT	SOLUTIONS, IES
PYRAMID PROJECT #:	2016-265		**FIGURE 2**

ATTACHMENT C

Solutions-IES
Industrial & Environmental Services

Log of Boring 124-SB-1

BORING LOCATION: Parcel #124, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/25/2016 — DATE FINISHED: 10/25/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 10 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0				Asphalt.	0
1		100%	0.0	Light brown silty fine sand. Dry.	1
2					2
3			0.0		3
4		100%		Dark brown silty fine sand. Dry.	4
5			0.0		5
6					6
7			1.2	Dark brown clayey sand.	7
8	124-SB-1-8-10	100%			8
9			1.6		9
10				End of Boring	10

Notes: 1) NA - Not available, PID reading not collected.

Solutions-IES
Industrial & Environmental Services

Log of Boring 124-SB-2

BORING LOCATION: Parcel #124, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/25/2016 — DATE FINISHED: 10/25/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 10 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0–3		100%	0.0 / 0.0	Light brown silty fine sand. Dry.	0–3
3–6		100%	0.0	Dark brown silty fine sand. Dry.	3–6
6–8		100%	0.3	Dark brown clayey sand. Dry.	6–8
8–10	124-SB-2-8-10	100%	0.3	Dark brown clayey sand. Dry.	8–10

End of Boring

Solutions-IES
Industrial & Environmental Services

Log of Boring 124-SB-3

BORING LOCATION: Parcel #124, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/25/2016 — DATE FINISHED: 10/25/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 10 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0–3		100%	0.0 / 0.1	Light brown silty fine sand. Dry.	0–3
3–7		80%	0.0 / 0.3	Dark brown silty fine sand. Dry.	3–7
7–10	124-SB-3-8-10	100%	0.1	Dark brown clayey sand. Dry.	7–10

End of Boring

Solutions-IES
Industrial & Environmental Services

Log of Boring 124-SB-4

BORING LOCATION: Parcel #124, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/25/2016 — DATE FINISHED: 10/25/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 10 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0–2		100%	0.2	Light brown silty fine sand. Dry.	0–2
2–4			1.0	Dark brown silty fine sand. Dry.	2–4
4–6		100%	0.3		4–6
6–8			0.6	Dark brown clayey sand. Dry.	6–8
8–9	124-SB-4-8-10	100%	0.6		8–9
9–10					9–10

End of Boring

Solutions-IES
Industrial & Environmental Services

Log of Boring 124-SB-5

BORING LOCATION: Parcel #124, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/25/2016 — DATE FINISHED: 10/25/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 10 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0				Asphalt.	0
1		100%	0.0	Light brown silty fine sand. Dry.	1
2					2
3			0.0		3
4					4
5		100%	0.1	Dark brown silty fine sand. Dry.	5
6					6
7			0.0		7
8	124-SB-5-8-10	100%	0.2		8
9					9
10				End of Boring	10

ATTACHMENT D

PHOTO 1 - VIEW OF SOIL BORING LOOKING SOUTH

PHOTO 2 - VIEW OF SOIL BORING LOOKING WEST

PHOTO 3 - VIEW OF SOIL BORING LOOKING NORTH

PHOTO 4- VIEW OF SOIL BORING LOOKING NORTH

PHOTO 5- VIEW OF SOIL BORING LOOKING EAST

ATTACHMENT E

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: Parcel 124: 6261 Raeford Road
Fayetteville, NC

Samples taken 10/25/2016
Samples extracted 10/25/2016
Samples analysed 10/25/2016

Contact:

Operator Candy Elliott

Project: 2016.0054.NDOT

U04049

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	124-SB-1-8-10	25.4	<0.63	<0.63	12.7	12.7	4.9	0.24	0.004	0	88.2	11.8	Deg Fuel (FCM) (BO) 77.1%
s	124-SB-2-8-10	5.9	<0.15	<0.15	<0.15	<0.15	<0.03	<0.005	<0.001	0	54.8	45.2	Residual.PHC
s	124-SB-3-8-10	25.4	<0.63	<0.63	1.4	1.4	0.82	0.05	<0.003	0	74.9	25.1	Residual.PHC (FCM) 58%
s	124-SB-4-8-10	5.9	<0.15	1	0.15	1.15	<0.05	<0.005	<0.001	96	2	2	V.Deg.Gas (FCM) (P) (BO) 54.8%
s	124-5-8-10	28.1	<0.7	0.7	1.8	2.5	1.3	0.07	<0.003	37.5	46.2	16.3	Deg.PHC (FCM) (BO) 60.7%
	Initial Calibrator QC check	OK											

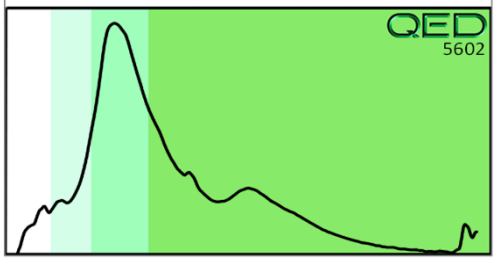
Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

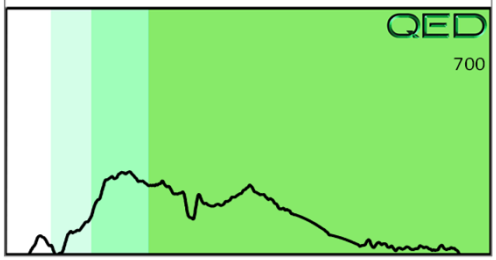
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

Project: 2016.0054.NDOT 10/25/2016

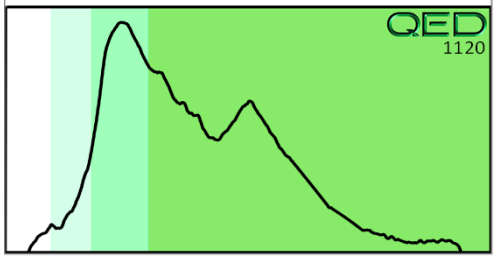
124-SB-1-8-10 : Deg Fuel (FCM) (BO) 77.1%



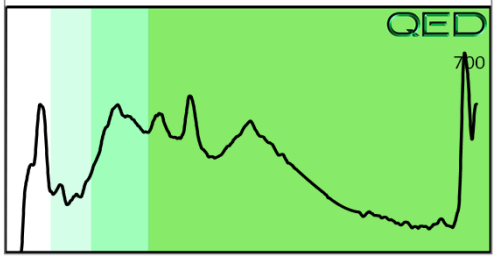
124-SB-2-8-10 : Residual.PHC



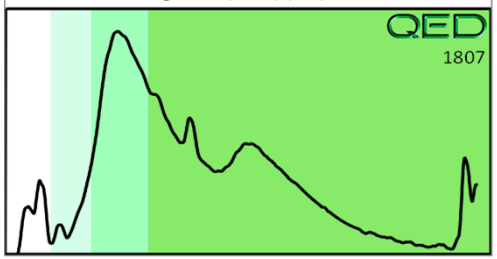
124-SB-3-8-10 : Residual.PHC (FCM) 58%



124-SB-4-8-10 : V.Deg.Gas (FCM) (P) (BO) 54.8%



124-5-8-10 : Deg.PHC (FCM) (BO) 60.7%



File Review Reports
Bill and Maria Pappas Property (Parcel #124)
6261 Raeford Road
Fayetteville, Cumberland County, North Carolina
State Project: U-4405
WBS Element 39049.1.1

SV

UNDERGROUND STORAGE TANK CLOSURE REPORT

SCOTCHMAN #38

FAYETTEVILLE, NORTH CAROLINA

WORSLEY COMPANIES, INC.

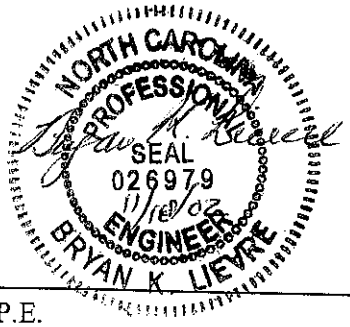
DELTA PROJECT NO. X0NC-057

UNDERGROUND STORAGE TANK CLOSURE REPORT
SCOTCHMAN #38
6261 RAEFORD ROAD
FAYETTEVILLE, NORTH CAROLINA
NOVEMBER 18, 2002

Facility ID:	0-011379
Property Owner:	Worsley Companies, Inc P.O. Box 3227 Wilmington, NC 28406 (910) 395-5300
UST Owner:	Worsley Companies, Inc P.O. Box 3227 Wilmington, NC 28406 (910) 395-5300
Release Information:	Discovery date: October 24, 2002 Cause of release: UST System Source: UST System consisting of 1-4,000 gallon kerosene and 3-6,000 gallon gasoline USTs.
Latitude: Longitude:	35° 04' 27" N 79° 28' 53" W

Prepared for:
Worsley Companies, Inc.
P.O. Box 3227
Wilmington, NC 28406
(910) 395-5300

Prepared By:
Delta Environmental Consultants, Inc.
3205 Randall Parkway, Suite 104
Wilmington, NC 28406
(910) 772-6492



Bryan K. Lievre, P.E.
North Carolina Professional Engineer
No. 026979

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UNDERGROUND STORAGE TANK CLOSURE REPORT
SCOTCHMAN # 38
6261 RAEFORD ROAD
FAYETTEVILLE, NORTH CAROLINA

On behalf of Worsley Companies, Inc. (WCI), Delta Environmental Consultants, Inc. (Delta) has prepared the following Underground Storage Tank Closure Report on closure activities performed at the Scotchman #38 facility in Fayetteville, Cumberland County, North Carolina. This report has been prepared pursuant to applicable sections of Title 15A of the North Carolina Administrative Code (NCAC), Chapter 2, Subchapter 2L and in accordance with the *Guidelines for Tank Closure (the Guidelines)*, provided by the North Carolina Department of Environment and Natural Resources (NCDENR), Division of Waste Management (DWM), Underground Storage Tank (UST) Section, dated December 2000.

1.0 GENERAL INFORMATION

1.1 UST OWNER

Worsley Companies, Inc.
10 Cardinal Drive
Wilmington, NC 28406
(910) 395-5300

1.2 UST OPERATOR

Worsley Companies, Inc.
10 Cardinal Drive
Wilmington, NC 28406
(910) 395-5300

1.3 FACILTY INFORMATION

Scotchman #38
Facility ID # 0-011379
6261 Raeford Road
Fayetteville, NC

1.4 CONTACTS

1.4.1 Primary Contact

Don Quinn
Worsley Companies, Inc.
10 Cardinal Drive
Wilmington, NC 28406
(910) 395-5300

1.4.2 Closure Contractor

Worsley Companies, Inc.
10 Cardinal Drive
Wilmington, NC 28406
(910) 395-5300

1.4.3 Primary Consultant

Delta Environmental Consultants, Inc.
3205 Randall Parkway
Suite 104
Wilmington, NC 28403
(910) 772-6492

1.4.4 Laboratory

Paradigm Analytical Laboratories, Inc.
2627 Northchase Parkway SE
Wilmington, NC 28405
(910) 350-1903
State Certification No. 481

1.5 UST INFORMATION

Tank # **	Installation Date*	Size in Gallons	Tank Dimensions (Diameter x Length)	Last Contents	Date Closed
UST-1	04/01/1961	6,000	6' x 30'	Gasoline	10/24/2002
UST-2	04/01/1961	6,000	6' x 30'	Gasoline	10/23/2002
UST-3	04/01/1961	6,000	6' x 30'	Gasoline	10/23/2002
UST-4	03/26/1985	4,000	6' x 24'	Kerosene	10/23/2002
UST-5	04/01/1961	550	Unknown	Waste Oil	03/01/1984

*- Based on data obtained from the NCDENR registered tanks database.
** See Figure 2 for UST locations (The location of UST-5 is unknown and not shown on Figure 2).

1.6 SITE CHARACTERISTICS

1.6.1 Past Releases

There are no known releases at this site.

1.6.2 Site Status

The site is an inactive retail fuel outlet and convenience store.

1.6.3 Surrounding Property Use

The site is situated in a commercial area. The site is located at 6261 Raeford Road in Fayetteville, Cumberland County, North Carolina. **Figure 1** provides a map showing the location of the site and the general topography of the surrounding area. **Figure 2** provides a general layout of the site including street names, building location, the location of the subject USTs, and the location of soil samples collected during the UST closure.

1.6.4 Site Geology/Hydrogeology

Soils encountered during this assessment consisted primarily of tan to reddish-brown silty fine to medium sand. Groundwater was not encountered in the UST excavations.

1.6.5 Receptor Survey

A complete receptor survey was not performed in the area during UST closure activities, however a windshield survey of the surrounding area was performed. The surrounding area is primarily commercial and the presence of fire hydrants in the area indicates probable municipal water supplies.

2.0. CLOSURE PROCEDURES

2.1 NOTIFICATIONS

A UST-3 form was filed with the Fayetteville Regional Office of the NCDENR, by WCI. A copy of the completed UST-3 form is presented in **Appendix A.** A Copy of the 24-Hour release form was completed and faxed to the Fayetteville Regional office on October 24, 2002 and a copy of the UST-2 Form was completed and is included with this report. Copies of these forms are presented in **Appendix B**.

2.2 RESIDUAL MATERIAL

The contents of all the USTs were pumped out prior to initiation of closure activities. The USTs were transported to Scott Beards Tank Disposal in Elizabethtown, North Carolina for disposal. The disposal manifest for the UST are included in **Appendix C**.

2.3 EXCAVATION

2.3.1 Excavation Procedures

In order to remove the UST, the overburden (concrete, asphalt, and soil) was first excavated from above the UST. The thickness of the overburden was approximately one to three feet.

UST-4 was buried in Tank Basin #1 and was excavated on October 23, 2002. Following the excavation of soils in the lateral direction, the UST was removed from the excavation pit. Soils around UST-1 did not exhibit physical signs or olfactory evidence of petroleum staining. A small amount (approximately 0.5 gallon) of kerosene fuel was released from the UST onto the surrounding pavement during removal. The final approximate dimensions of Tank Basin #1 were 28 feet in length, nine feet in width, and nine feet in depth.

UST-1 through UST-3 were buried in Tank Basin #2 and were excavated on October 23 and 24, 2002. Following the excavation of soils in the lateral direction, the USTs were removed from the excavation pit. Soils around UST-2 through UST-4 did exhibit some physical signs (staining around the top of the USTs) and olfactory evidence of petroleum staining. A small amount (approximately one to two gallons) of gasoline fuel was released while disconnecting the product lines from the USTs. The final approximate dimensions of Tank Basin #2 were 25 feet in length, 36 feet in width, and seven feet in depth.

All soils removed from the excavations were taken offsite for disposal. The dispenser for UST-4 existed above the UST and therefore was removed along with the product line during excavation activities. The gasoline dispensers were not removed and the gasoline product lines were drained and reportedly crimped but also not removed. **Figure 2** depicts the approximate lateral limits of the excavation and the location of the tanks within the excavation.

2.3.2 Depth to UST

The USTs were buried approximately one to three feet below ground surface.

2.3.3 Volume of Excavated Soil

An unknown quantity of excavated soil was removed and transported offsite for disposal. Copies of the soil disposal manifests will be forwarded under separate cover upon receipt to Delta.

2.3.4 Soil Description

Please refer to section 1.6.4 for the soil description.

2.3.5 Backfill

Clean fill material was brought in from off site to back fill Tank Basin #1 and #2.

2.3.6 Condition of UST System

All the USTs appeared to be in fair condition with no pitting, holes or indentations evident. The tanks were taken to Scott Beards Tank Disposal in Elizabethtown for disposal. A copy of the UST disposal manifest is included in **Appendix C**.

2.3.7 Vertical Extent of Excavation

The vertical extent of the excavations, to remove the USTs, was approximately nine feet in depth in Tank Pit #1 and seven feet in Tank Pit #2.

2.4 IMPACTED SOIL

2.4.1 Determination of the Limits of Excavation

The length and width of the UST being removed and the size of excavation equipment determined the lateral limits of the excavation.

2.4.2 Method of Storage, Sampling and Disposal

Excavated soils from the UST basins were temporarily stockpiled on site. All soils removed from the excavations were removed and transported offsite for disposal. The soil disposal manifest will be forwarded under separate cover upon receipt to Delta.

3.0 SITE ASSESSMENT

3.1 FIELD SCREENING

Field screening was not performed on the excavated soils.

3.2 SOIL SAMPLING

3.2.1 Location of Samples

Based on the length of the USTs and product lines and location of dispensers, two soil samples were collected from the dispenser islands, one soil sample was collected from the product piping trenches, and 27 soil samples were collected sides and bottom of the UST basins. The soil samples were collected approximately one and one-half to nine feet below ground surface (See **Table 1**).

3.2.2 Type Of Samples

All soil samples were discreet grab samples collected from the UST basins, product lines or dispenser locations.

3.2.3 Sample Collection Method

Soil samples were grab samples collected from the UST pits using the backhoe bucket. The individual samples were sent to a North Carolina certified laboratory for analysis.

3.2.4 Sample Identification/Depth of Samples/ Sample Analyses

Soil samples were identified as follows: Dispenser Island (D), Product Lines (PL), UST Basin Side Walls (SW) and UST Basin Bottom (B). Samples depths and analysis is given in the following table:

Sample ID	Depth of Sample below ground surface (feet)	Sample Analysis
D-1	1.5	TPH 3550/5030
D-2	1.5	TPH 3550/5030
PL-1	2	TPH 3550/5030
SW-1	4	TPH 3550/5030
SW-2	4	TPH 3550/5030
SW-3	4	TPH 3550/5030
SW-4	4	TPH 3550/5030
SW-5	4	TPH 3550/5030
SW-6	4	TPH 3550/5030
SW-7	4	TPH 3550/5030
SW-8	3.5	TPH 3550/5030
SW-9	3.5	TPH 3550/5030
SW-10	3.5	TPH 3550/5030
SW-11	4	TPH 3550/5030
SW-12	4	TPH 3550/5030
SW-13	3.5	TPH 3550/5030
SW-14	3.5	TPH 3550/5030
SW-15	4	TPH 3550/5030
B-1	9	TPH 3550/5030
B-2	9	TPH 3550/5030
B-3	9	TPH 3550/5030
B-4	7	TPH 3550/5030
B-5	7	TPH 3550/5030
B-6	7	TPH 3550/5030
B-7	7	TPH 3550/5030
B-8	7	TPH 3550/5030
B-9	7	TPH 3550/5030
B-10	7	TPH 3550/5030
B-11	7	TPH 3550/5030
B-12	7	TPH 3550/5030

3.3 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

All necessary measures were taken in order to ensure the integrity of the soil samples.

3.3.1 Sample Handling Procedures

To prevent the cross contamination of soil samples through their handling in the field, Delta personnel wore a new pair of disposable latex gloves at each sampling location. Soil samples were collected in laboratory provided containers. Once the samples were collected and labeled for identification, they were placed on ice in a cooler and delivered to Paradigm Analytical Laboratories, Inc. for analysis.

3.3.2 Decontamination Procedures

Soil samples, from beneath the USTs were collected using a soil excavator (track hoe). Delta personnel wore a new pair of disposable latex gloves at each sampling location.

3.3.3 Sample Times and Dates

For sample times and dates, please refer to the chain-of-custody available in **Appendix D**.

3.3.4 Quality Control Samples

The analytical laboratory provided a temperature blank to ensure the samples were maintained at the required temperature. The temperature of the samples is recorded on the chain-of-custody.

3.3.5 Interpretation of QA/QC Results

Based on the QA/QC measures taken, Delta believes the analytical results of the soil samples are representative of site conditions at the time the samples were collected.

3.4 ANALYTICAL RESULTS

3.4.1 Methods of Analysis

For the soil analytical methods used, please refer to section 3.2.4.

3.4.2 Analytical Results

Laboratory analyses of soil samples collected at the site during closure activities indicated petroleum hydrocarbon constituent concentrations were detected at or above the state action limit of 10 milligrams per kilogram (mg/kg) for gasoline and/or diesel range total petroleum hydrocarbons by EPA Methods 5030 and 3550, respectively in samples D-1, D-2, PL-1, SW-11, SW-12 and B-8 through B-12. **Table 1** provides a summary of the soil analytical results. A copy of the laboratory report and chain-of-custody is included in **Appendix D**.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

Based on the information obtained during this UST Closure, the following conclusions are made:

- One 4,000-gallon kerosene product UST and three 6,000-gallon gasoline product USTs were removed from the site on October 23 and 24, 2002 and taken to Scott Beards Tank Disposal in Elizabethtown, North Carolina for disposal.
- An unknown quantity of petroleum-contaminated soil was removed and taken offsite for disposal from the site during closure activities.
- Analytical results of the soil samples associated with the UST closure detected the presence of petroleum hydrocarbon compounds above state action limits.

4.2 RECOMMENDATIONS

Based on the information obtained during this assessment, the following recommendation is made:

- A Limited Site Assessment should be performed.

5.0 REMARKS

The recommendations contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted hydrogeologic and relevant regulatory guidelines at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by:

DELTA ENVIRONMENTAL CONSULTANTS, INC.

Monika H. Satterwhite
Staff Scientist

This report was reviewed by:

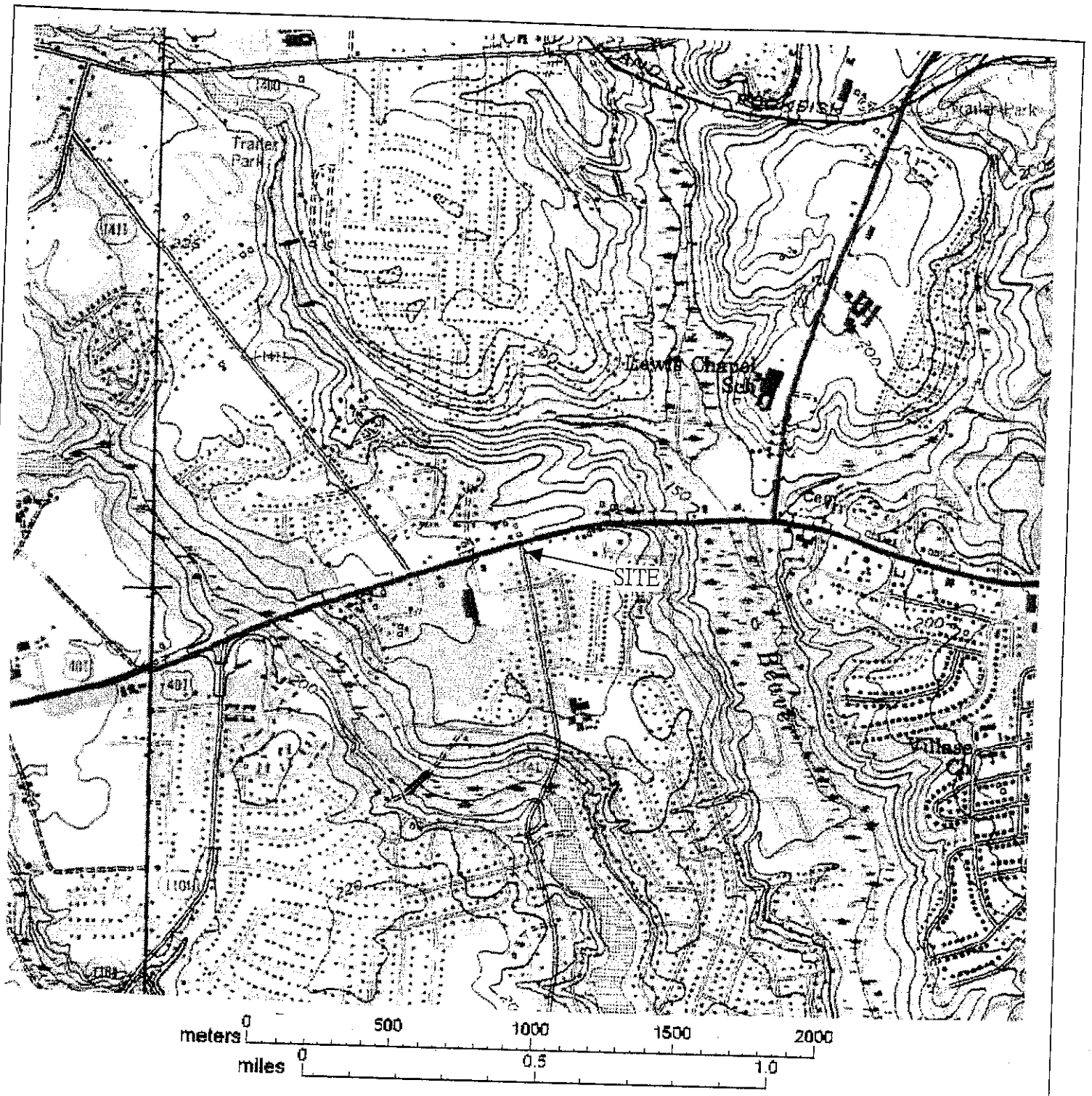
Bryan K. Lievre
Project Manager

TABLE 1
SOIL ANALYTICAL RESULTS
UST CLOSURE
SCOTCHMAN #38
FAYETTEVILLE, NORTH CAROLINA
DELTA PROJECT NO. X0NC-057

Sample ID	Sample Date	Sample Depth (ft. bgs)	TPH-GRO (EPA 5030) (mg/kg)	TPH-DRO (EPA 3550) (mg/kg)
D-1	10/23/2002	1.5	**1,800**	**3,010**
D-2	10/23/2002	1.5	**4,000**	**4,220**
PL-1	10/23/2002	2	<6.7	**26**
SW-1	10/23/2002	4	<6.6	<6.8
SW-2	10/23/2002	4	<6.9	<7.2
SW-3	10/23/2002	4	<7.1	<7.4
SW-4	10/23/2002	4	<6.6	<6.5
SW-5	10/23/2002	4	<6.3	<6.2
SW-6	10/24/2002	4	<6.9	<7.2
SW-7	10/24/2002	4	<6.5	<6.3
SW-8	10/24/2002	3.5	<6.4	7.0
SW-9	10/24/2002	3.5	<6.6	<6.9
SW-10	10/24/2002	3.5	<6.5	<6.7
SW-11	10/24/2002	4	**51**	**567**
SW-12	10/24/2002	4	**10**	**51**
SW-13	10/24/2002	3.5	<6.7	<6.9
SW-14	10/24/2002	3.5	<6.7	<7.0
SW-15	10/24/2002	4	<6.7	<7.0
B-1	10/23/2002	9	<6.6	<6.6
B-2	10/23/2002	9	<6.7	<7.3
B-3	10/23/2002	9	<6.7	<6.8
B-4	10/24/2002	7	<7.0	<7.6
B-5	10/24/2002	7	<7.0	<6.5
B-6	10/24/2002	7	<7.0	<7.1
B-7	10/24/2002	7	<6.9	<7.0
B-8	10/24/2002	7	**700**	**2,380**
B-9	10/24/2002	7	**1,900**	**1,620**
B-10	10/24/2002	7	**210**	**840**
B-11	10/24/2002	7	**850**	**1,000**
B-12	10/24/2002	7	**1,200**	**1,990**
NC Action Levels			**10**	**10**

Notes:

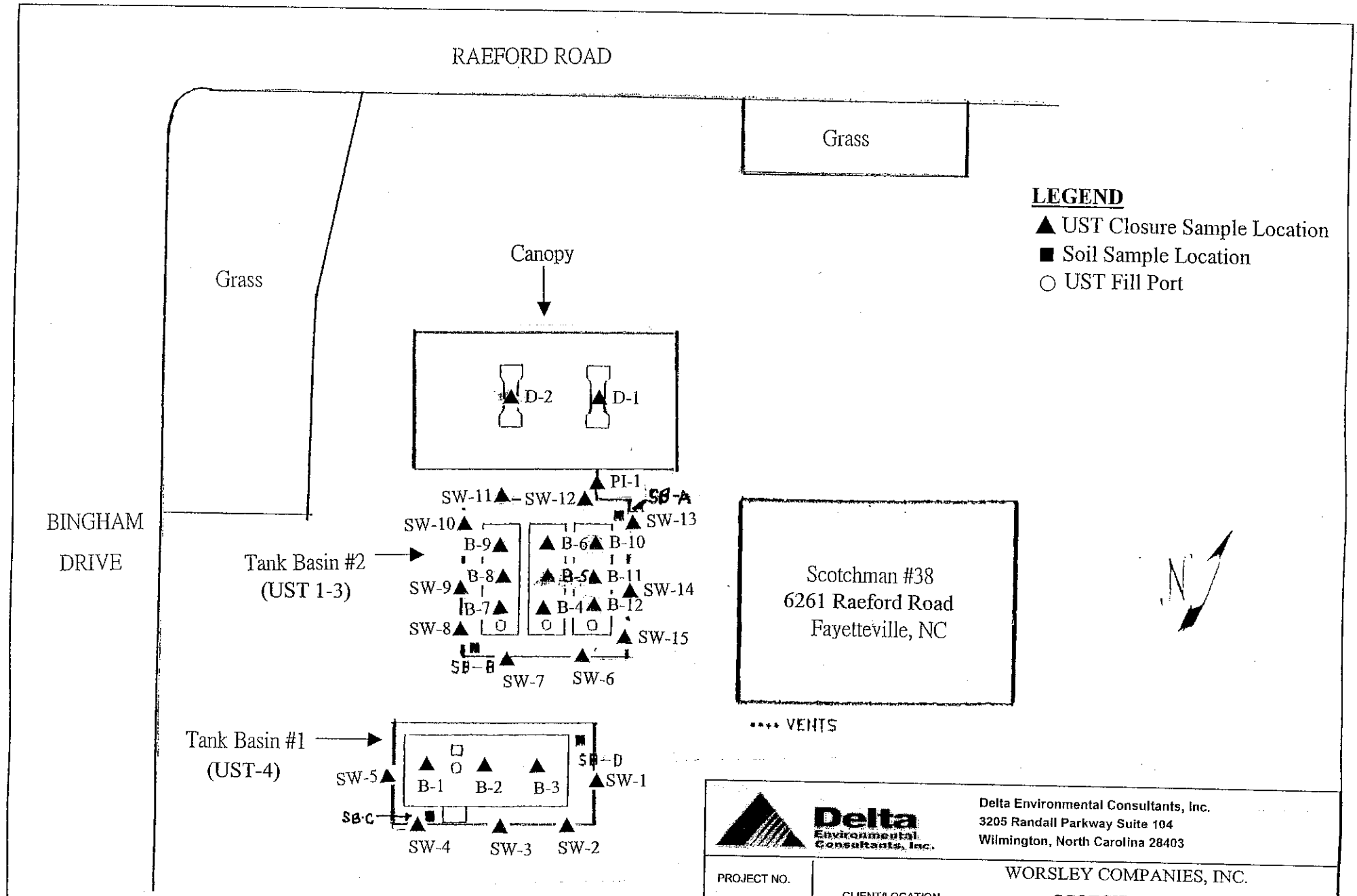
1) *ft. bgs. denotes feet below ground surface*
2) *mg/kg denotes milligrams per kilogram*
3) *All results in **BOLD** exceed Action Levels*
4) *TPH-GRO denotes Total Petroleum Hydrocarbons-Gasoline Range Organic*
5) *TPH-DRO denotes Total Petroleum Hydrocarbons-Diesel Range Organics*



FAYETTEVILLE QUADRANGLE
NORTH CAROLINA
7.5 MINUTE TOPOGRAPHIC SERIES

Delta Environmental Consultants, Inc.
3205 Randall Parkway Suite 104
Wilmington, North Carolina 28403

PROJECT NO. X0NC-057	CLIENT/LOCATION WORSLEY COMPANIES, INC. SCOTCHMAN #38 FAYETTEVILLE, NORTH CAROLINA	
PROJECT MANAGER B. Lievre	FIGURE NO.	DRAWING DESCRIPTION
DATE 11/21/02	1	SITE VICINITY MAP



Delta Environmental Consultants, Inc.
3205 Randall Parkway Suite 104
Wilmington, North Carolina 28403

PROJECT NO. X0NC-057	CLIENT/LOCATION	WORSLEY COMPANIES, INC. SCOTCHMAN #38 FAYETTEVILLE, NORTH CAROLINA
PROJECT MANAGER B.LIEVRE	FIGURE NO. 2	DRAWING DESCRIPTION SITE MAP
DATE 11/21/02		

UST-3 Notice of Intent: UST Permanent Closure of Change-in-Service

FOR TANKS IN NC

Return completed form to:
The DWM Regional Office located in the area where the facility is located. SEE MAP ON THE BACK OF THIS FORM FOR REGIONAL OFFICE ADDRESSES.

STATE USE ONLY
I.D. #
Date Received

INSTRUCTIONS

Complete and return at least five (5) working days prior to closure or change-in-service if a Professional Engineer (P.E.) or a Licensed Geologist (L.G.) provides supervision for closure or change-in-service site assessment activities and signs and seals all closure reports. Otherwise, a thirty (30) day notice is required.

I. OWNERSHIP OF TANKS

Wamley Companies Inc.
Owner Name (Corporation, Individual, Public Agency, or Other Entity)
105 Cardinal Drive
Street Address
Wilmington — New Hanover
City — County
NC — 28406
State — Zip Code
910 395-5300
Area Code — Phone Number

II. LOCATION

Scotchman #038
Facility Name or Company
0011379
Facility ID # (If known)
6261 Raeford Rd
Street Address
Fayetteville — Cumberland — 28304
City — County — Zip Code
910 867-1942
Area Code — Phone Number

III. CONTACT PERSONNEL

Name Don Quinn — Job Title VP. Environmental Mgmt — Phone Number 910 395-5300

IV. TANK REMOVAL, CLOSURE IN PLACE, CHANGE-IN SERVICE

1. Contact local fire marshal.
2. Plan entire closure event.
3. Conduct Site Soil Assessment.
4. If removing tanks or closing in place, refer to API Publication 2015 *Cleaning Petroleum Storage Tanks* and 1604 *Removal and Disposal of Used Underground Petroleum Storage Tanks.*
5. Provide a sketch locating piping, tanks and soil sampling locations.
6. Submit a closure report in the format of UST-12 (including the form UST-2) within thirty (30) days following the site investigation.
7. If a release from the tanks has occurred, the site assessment portion of the tank closure must be conducted under the supervision of a P.E. or L.G., with all closure site assessment reports bearing the signature and seal of the P.E. or L.G. If a release has not occurred, the supervision, signature or seal of a P.E. or L.G. is not required.
8. Keep closure records for three (3) years.

V. WORK TO BE PERFORMED BY

Contractor Name Wamley Companies Construction
Address 105 Cardinal Drive — State NC — Zip Code 28406
Contact Person Arthur Moore — Phone No. 910 395-5300
Primary Consultant Delta Environmental — Phone No. 910 772-2291

VI. TANKS SCHEDULED FOR CLOSURE OR CHANGE-IN-SERVICE

Tank ID #	Tank Capacity	Last Contents	Proposed Activity: Closure — Remove:	Closure — Abandonment in Place	Change-In-Service — New Contents Stored
1	6000	Gasoline	☐	☐	
2	6000	Gasoline	☐	☐	
3	6000	Gasoline	☐	☐	
4	4000	Kerosene	☐	☐	
			☐	☐	
			☐	☐	

VII. OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE

I understand that I can be held responsible for environmental damage resulting from the improper disposal of my USTs. Read note on the back of this form before signing.
Print name and official title

Signature	Date Signed	SCHEDULED REMOVAL DATE	Notify your DWM Regional Office 48 hours before this date if scheduled removal date changes
Don Quinn	10-17-02	10/22/02	

UST-3 Rev 02/2001 — White copy – Regional Office — Yellow Copy – Central Office — Pink Copy - Owner

UST-2 Site Investigation Report for Permanent Closure or Change-in-Service of UST

FOR TANKS IN NC

Return completed form to:
The DWM Regional office in the area the facility is located. SEE MAP ON THE BACK OF THIS FORM FOR REGIONAL OFFICE ADDRESSES. Return the yellow copy to the Central Office in Raleigh so that the status of ths tank may be changed to "PERMANENTLY CLOSED".

STATE USE ONLY:
I.D. #
Date Received

I. OWNERSHIP OF TANKS

WORSLEY COMPANIES
Owner Name (Corporation, Individual, Public Agency, or Other Entity)
105. CARDINAL DR
Street Address
WILMINGTON — NEW HANOVER
City — County
NC — 28406
State — Zip Code
910 - 395 - 5300
Area Code — Phone Number

II. LOCATION OF TANKS

SCOTCHMAN #38
Facility Name or Company
0-011379
Facility ID # (If known)
62161 RAEFORD RD
Street Address
FAYETTEVILLE — CUMBERLAND — N/A
City — County — Zip Code
Area Code — Phone Number

III. CONTACT PERSONNEL

Name DON QUINN, WORSLEY COMP. Job Title ENV. MANAGER Tel. No. 910-395-5300
Closure Contractor WORSLEY COMP. Address 105. CARDINAL DR. WILM. Tel. No. 910-395-5300
Primary Consultant DELTA ENV. Address 3205 RANDALL PKWY WILM. Tel. No. 910-772-6492
Lab PARADIGM LAB Address 2627 NORTHCHASE WILM. Tel. No. 910-350-1903

IV. UST INFORMATION / V. EXCAVATION CONDITION

Tank No.	Size in Gallons	Tank Dimensions	Last Contents	Water in excavation Yes	Water in excavation No	Free product Yes	Free product No	Notable odor or visible soil contamination Yes	Notable odor or visible soil contamination No
1	6000	6x30'	GASOLINE		X		X	X	
2	6000	6'x30'	GAS		X		X	X	
3	6000	6x30'	GAS		X		X	X	
4	4000	6x24'	KEROSENE		X		X		X

VI. ADDITIONAL INFORMATION

See reverse side of pink copy (owner's copy) for additional information required by NC DWM in the written report and sketch.

NOTE: If a release from the tank(s) has occurred, the site assessment portion of the tank closure must be conducted under the supervision of a P.E. or L.G., with all closure site assessment reports bearing the signature and seal of the P.E. or L.G.

VII. CHECKLIST (CHECK THE ACTIVITIES COMPLETED)

PERMANENT CLOSURE
(For Removal or Abandonment-in-Place)

- ☐ Contact local fire marshal
- ☒ Notify DWM Regional Office before abandonment
- ☒ Drain and flush piping into tank
- ☒ Remove all product and residuals from tank
- ☒ Excavate down to tank
- ☒ Clean and inspect tank
- ☒ Remove drop tube, fill pipe, gauge pipe, vapor recovery tank connections, submersible pumps, and all other tank fixtures
- ☒ Cap or plug all lines except the vent and fill lines
- ☒ Purge the tank of all product and flammable vapors
- ☒ Cut one or more large holes in the tank
- ☒ Backfill the area

Date tank(s) Permanently Closed: 10/23-24/02
Date of Change in-service: —

ABANDONMENT IN PLACE

- ☐ Fill tank until material overflows tank opening
- ☐ Plug or cap all openings
- ☐ Disconnect and cap or remove vent line
- ☐ Solid inert material used --specify

REMOVAL

- ☒ Create vent hole
- ☒ Label tank
- ☒ Dispose of tank in approved manner. Final tank destination: SCOTT BEARDS TANK DISPOSAL

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true accurate and complete

Print name and official title of owner or owner's authorized representative	Signature	Date Signed
MONIKA SATTERWHITE / STAFF SCIENTIST	Monika Satterwhite	10/15/02

UST-2 Rev 02/2001 — White copy – Regional Office — Yellow Copy – Central Office — Pink Copy – Owner

Received November 19, 2002

NC Department of Environment and Natural Resources, Division of Waste Management, Underground Storage Tank Section

24-Hour Release and UST Leak Reporting Form

This form should be completed and submitted to the UST Section's regional office following a known or suspected release from an underground storage tank (UST) system. This form is required to be submitted within 24 hours of discovery of a known or suspected release.

(DWM USE ONLY)
Incident # _____ Risk (H,I,L,U) _____
Received On _____ Received By _____
Reported by (*circle one*): Phone, Fax or Report
Region _____

Suspected Contamination? (Y/N) Y
Confirmed GW Contamination? (Y/N) N
Confirmed Soil Contamination ?(Y/N) Y
Free Product ? (Y/N) N If Yes, State Greatest Thickness _____

Facility ID Number 0-011379
Date Leak Discovered 10/24/02
Comm/Non-Commercial? Comm
Reg/Non-regulated? REG

INCIDENT DESCRIPTION

Incident Name: SCOTCHMAN #38

Address: 6261 RAEFORD ROAD | County: CUMBERLAND

City/Town: FAYETTEVILLE | Regional Office (*circle one*): Asheville, Mooresville, Fayetteville, Raleigh, Washington, Wilmington, Winston-Salem

Latitude (dd.mm.ssss): | Longitude (ddd.mm.ssss) : | Confirmed by GPS? (Y/N) ____

Briefly describe suspected or confirmed release: *(including but not limited to: Nature and extent of release, date of release, amount of release, amount of free product present and recovery efforts, initial responses conducted, impacts to receptors)*

Approx. 1-2 gallons of gasoline released while disconnecting product lines. Odor was present in soil in ust basin and in soil samples collected. Some staining was present in soil located directly above ust's prior to removal.

HOW RELEASE WAS DISCOVERED

(Check one)

- ☐ Release Detection Equipment or Methods
- ☐ During UST Closure/Removal
- ☐ Property Transfer
- ☑ Visual/Odor
- ☐ Water in Tank
- ☐ Water Supply Well Contamination
- ☐ Groundwater Contamination
- ☐ Surface Water Contamination
- ☐ Other (specify) _____

SOURCE OF CONTAMINATION

Primary Source of Contamination *(Check one)*

- ☐ Suspected UST Release
- ☑ Confirmed UST Release *(Also check one below):*
  - ☐ A. Dispenser
  - ☑ B. Line Release
  - ☐ C. Tank Release
  - ☐ D. Spill/Overfill
  - ☐ E. Exact Failure Location Unknown or Multiple Failures
- ☐ Unknown Source (Believed to be UST Source, explain in "Incident Description" above)

Primary Contaminant Type *(Check one)*

- ☑ Gasoline/Diesel/Kerosene
- ☐ Heating Oil
- ☐ Other Petroleum Products
- ☐ Metals
- ☐ Other Inorganics
- ☐ Other Organics

Location *(Check one)*

- ☒ Facility
- ☐ Residence
- ☐ Other

Setting *(Check one)*

- ☐ Residential
- ☐ Industrial
- ☑ Urban
- ☐ Rural

Ownership
1. Municipal 2. Military 3. Unknown 4. Private 5. Federal 6. County 7. State

Operation Type
1. Public Service 2. Agricultural 3. Residential 4. Education/Relig. 5. Industrial 6. Commercial 7. Mining

IMPACT ON DRINKING WATER SUPPLIES

Water Supply Wells Affected? 1. Yes 2. No 3. Unknown

Number of Water Supply Wells Affected Unknown

Water Supply Wells Contaminated: (*Include Users Names, Addresses and Phone Numbers. Attach additional sheet if necessary*)

1. Unknown. Did not discover any water supply
2. wells in area surrounding site.
3.

UST SYSTEM OWNER

UST Owner/Company			
WORSLEY COMPANIES, INC			
Point of Contact		Address	
MR. DON QUINN		10 S. CARDINAL DR.	
City	State	Zip Code	Telephone Number
WILMINGTON	NC	28406	910-395-5300

UST SYSTEM OPERATOR

UST Operator/Company			
SAME AS ABOVE			
City	State	Zip Code	Telephone Number

LANDOWNER AT LOCATION OF UST INCIDENT

Landowner			
UNKNOWN AT THIS TIME			
City	State	Zip Code	Telephone Number

Draw Sketch of Area (showing two major road intersections) or Attach Map

MAP ATTACHED

Person Reporting Incident	Company	Telephone Number
Scott Conley	Delta Environmental Consultants	910-772-2282
Title	Address	Date
Staff Technician	3205 Randall Pkwy, St. 104	10-24-02

WORSLEY COMPANIES, INC.

10 S. CARDINAL DR. • P.O. BOX 3227 • WILMINGTON, N.C. 28406
(910) 395-5300 • FAX (910) 395-6691

TANK DISPOSAL MANIFEST

Site Name:	Scotchman #38
Site Location:	Fayetteville, North Carolina
Generator:	Worsley Companies, Inc. 10 Cardinal Drive Wilmington, NC
Contact:	Don Quinn, Vice President, Environmental Affairs 901-395-5300
Removal Contractor:	Worsley Companies, Inc. 10 Cardinal Drive Wilmington, NC
Transporter:	Worsley Transport 22 Poole Rd. Wilmington, NC
Disposal Contractor:	Scott Beard's Tank Disposal Hwy. 87 East Elizabethtown, NC
Tanks:	1-4,000 gal. Kerosene 3-6,000 gal. Gasoline Removed 10/23-24/02

Note: Tanks to be disposed of as scrap

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	DI-1	Date Collected:	10/23/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55389	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	96.3
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	**1800**	1200	5030/8015B	200.0	10/31/02
Diesel Range Organics	**3010**	128	3550/8015B	20.0	10/31/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	DI-2		
Client Project ID:	Scotchman #38	Date Collected:	10/23/02
Lab Sample ID:	55390	Date Received:	10/25/02
Lab Project ID:	G129-620	Analyzed By:	BMS
Matrix:	Soil	%Solids:	86.3

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	**4000**	1700	5030/8015B	250.0	10/31/02
Diesel Range Organics	**4220**	341	3550/8015B	50.0	10/31/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

N.C. Certification #481 S.C. Certification #99029 Reviewed By:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	PL-1	Date Collected:	10/23/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55388	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	88.9
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.7	5030/8015B	1.0	10/28/02
Diesel Range Organics	**26**	7.0	3550/8015B	1.0	10/29/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons

by GC 8015B

Client Sample ID:	SW-1	Date Collected:	10/23/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55380	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	91.3
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.6	5030/8015B	1.0	10/28/02
Diesel Range Organics	BQL	6.8	3550/8015B	1.0	10/29/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons

by GC 8015B

Client Sample ID:	SW-2	Date Collected:	10/23/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55381	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	86.5
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.9	5030/8015B	1.0	10/28/02
Diesel Range Organics	BQL	7.2	3550/8015B	1.0	10/29/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	SW-3	Date Collected:	10/23/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55382	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	84.6
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	7.1	5030/8015B	1.0	10/28/02
Diesel Range Organics	BQL	7.4	3550/8015B	1.0	10/29/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

N.C. Certification #481 S.C. Certification #99029 Reviewed By:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons

by GC 8015B

Client Sample ID:	SW-4	Date Collected:	10/23/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55383	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	91.0
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.6	5030/8015B	1.0	10/28/02
Diesel Range Organics	BQL	6.5	3550/8015B	1.0	10/29/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	SW-5	Date Collected:	10/23/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55384	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	95.0
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.3	5030/8015B	1.0	10/28/02
Diesel Range Organics	BQL	6.2	3550/8015B	1.0	10/29/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	SW-6	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55391	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	86.4
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.9	5030/8015B	1.0	10/30/02
Diesel Range Organics	BQL	7.2	3550/8015B	1.0	10/29/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons by GC 8015B

Client Sample ID:	SW-7	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55392	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	92.3
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.5	5030/8015B	1.0	10/30/02
Diesel Range Organics	BQL	6.3	3550/8015B	1.0	10/29/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	SW-8		
Client Project ID:	Scotchman #38	Date Collected:	10/24/02
Lab Sample ID:	55393	Date Received:	10/25/02
Lab Project ID:	G129-620	Analyzed By:	BMS
Matrix:	Soil	%Solids:	93.2

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.4	5030/8015B	1.0	10/29/02
Diesel Range Organics	7	6.6	3550/8015B	1.0	10/29/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	SW-10	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55395	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	92.2
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.5	5030/8015B	1.0	10/29/02
Diesel Range Organics	BQL	6.7	3550/8015B	1.0	10/30/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	SW-11	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55396	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	82.6
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	**51**	7.3	5030/8015B	1.0	10/29/02
Diesel Range Organics	**567**	39	3550/8015B	5.0	10/31/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons by GC 8015B

Client Sample ID:	SW-12	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55397	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	85.5
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	10	7.0	5030/8015B	1.0	10/29/02
Diesel Range Organics	51	7.0	3550/8015B	1.0	10/30/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	SW-13	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55398	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	89.0
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.7	5030/8015B	1.0	10/29/02
Diesel Range Organics	BQL	6.9	3550/8015B	1.0	10/30/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	SW-14		
Client Project ID:	Scotchman #38	Date Collected:	10/24/02
Lab Sample ID:	55399	Date Received:	10/25/02
Lab Project ID:	G129-620	Analyzed By:	BMS
Matrix:	Soil	%Solids:	89.0

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.7	5030/8015B	1.0	10/29/02
Diesel Range Organics	BQL	7.0	3550/8015B	1.0	10/30/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	SW-15	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55400	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	89.2
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.7	5030/8015B	1.0	10/29/02
Diesel Range Organics	BQL	7.0	3550/8015B	1.0	10/30/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	b-1	Date Collected:	10/23/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55385	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	90.5
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.6	5030/8015B	1.0	10/28/02
Diesel Range Organics	BQL	6.6	3550/8015B	1.0	10/29/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	b-2	Date Collected:	10/23/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55386	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	89.7
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.7	5030/8015B	1.0	10/28/02
Diesel Range Organics	BQL	7.3	3550/8015B	1.0	10/29/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

Reviewed By:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons

by GC 8015B

Client Sample ID:	b-3	Date Collected:	10/23/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55387	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	89.6
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.7	5030/8015B	1.0	10/28/02
Diesel Range Organics	BQL	6.8	3550/8015B	1.0	10/29/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	b-4	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55401	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	85.2
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	7.0	5030/8015B	1.0	10/29/02
Diesel Range Organics	BQL	7.6	3550/8015B	1.0	10/30/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	b-5	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55402	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	85.4
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	7.0	5030/8015B	1.0	10/29/02
Diesel Range Organics	BQL	6.5	3550/8015B	1.0	10/30/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	b-6	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55403	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	85.3
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	7.0	5030/8015B	1.0	10/29/02
Diesel Range Organics	BQL	7.1	3550/8015B	1.0	10/30/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	b-7	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55404	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	86.8
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.9	5030/8015B	1.0	10/29/02
Diesel Range Organics	BQL	7.0	3550/8015B	1.0	10/30/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons

by GC 8015B

Client Sample ID:	b-8	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55405	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	82.8
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	**700**	360	5030/8015B	50.0	10/31/02
Diesel Range Organics	**2380**	140	3550/8015B	20.0	10/31/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	b-9	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55406	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	84.5
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	**1900**	710	5030/8015B	100.0	10/31/02
Diesel Range Organics	**1620**	71	3550/8015B	10.0	10/31/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

Reviewed By:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons by GC 8015B

Client Sample ID:	b-10	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55407	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	84.6
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	**210**	140	5030/8015B	20.0	10/31/02
Diesel Range Organics	**840**	35	3550/8015B	5.0	10/31/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons
by GC 8015B

Client Sample ID:	b-11	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55408	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	82.6
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	**850**	360	5030/8015B	50.0	10/31/02
Diesel Range Organics	**1000**	74	3550/8015B	10.0	10/31/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum Hydrocarbons

by GC 8015B

Client Sample ID:	b-12	Date Collected:	10/24/02
Client Project ID:	Scotchman #38	Date Received:	10/25/02
Lab Sample ID:	55409	Analyzed By:	BMS
Lab Project ID:	G129-620	%Solids:	82.0
Matrix:	Soil		

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	**1200**	360	5030/8015B	50.0	10/31/02
Diesel Range Organics	**1990**	148	3550/8015B	20.0	10/31/02

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.
2627 Northchase Parkway SE, Wilmington, NC 28405
Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC#

Page 1 **of** 4

Client: Delta Environmental Consultants
Address: 3205 Randall Pkwy St. 104
Address: Wilmington, NC 28403
Quote #:

Project ID: Scotchman #38
Contact: Bryan Lievre
Phone: 910-772-2291
Fax: 910-254-0246

Date: ~~10-25-02~~ 10-24-02 S.C.
Turnaround: Standard
Job Number:
P.O. Number: —

Report To: Bryan Lievre
910-772-2291

Invoice To: Bryan Lievre

Sample ID	Date	Time	Matrix	Preservatives				Analyses: 5030/3550										Comments: Please specify any special reporting requirements
																		G129-620
SW-1	10-23-02	1145	S					1										
SW-2	↓	1147	↓					1										
SW-3	↓	1149	↓					1										
SW-4	↓	1151	↓					1										
SW-5	↓	1153	↓					1										
b-1	↓	1155	↓					1										
b-2	↓	1157	↓					1										
b-3	↓	1159	↓					1										

Relinquished By	Date	Time	Received By	Date	Time	Temperature
Edward Scott Conley	10-24-02	1630				
[signature]	10-25-02	11:10	[signature]	10/25/02	11:10	on ice 0.2°

State Certification Requested

NC ____ SC ____ Other ____

SEE REVERSE FOR TERMS AND CONDITIONS

PARADIGM ANALYTICAL LABORATORIES, INC.
2627 Northchase Parkway SE, Wilmington, NC 28405
Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 21013

Page 2 of 4

Client: Delta Environmental Consultants
Address: 3205 Randall Pkwy, St. 104
Address: Wilmington, NC 28403
Quote #: —

Project ID: Scotchman #38
Contact: Bryan Lievre
Phone: 910-772-2291
Fax: 910-254-0246

Date: 10-24-02
Turnaround: Standard
Job Number: —
P.O. Number: —

Report To: Bryan Lievre
910-772-2291

Invoice To: Bryan Lievre

Sample ID	Date	Time	Matrix	Preservatives	Analyses: 5030/3550	Comments: Please specify any special reporting requirements
						G129-620
PL-1	10-23-02	1300	S		1	
DI-1		1325			1	
DI-2		1330			1	
SW-6	10-24-02	945			1	
SW-7		947			1	
SW-8		949			1	
SW-9		951			1	
SW-10		953			1	
SW-11		955			1	
SW-12		957			1	

Relinquished By	Date	Time	Received By	Date	Time	Temperature
Edward Scott Conley	10-24-02	1630				
[illegible]	10-25-02	11:10	[illegible]	10/25/02	11:10	on ice 0.2°C

State Certification Requested
NC ____ SC ____ Other ____

SEE REVERSE FOR TERMS AND CONDITIONS

ORIGINAL

PARADIGM ANALYTICAL LABORATORIES, INC.
2627 Northchase Parkway SE, Wilmington, NC 28405
Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 19982

Page 3 of 11

Client: Delta Environmental Consultants
Address: 320 Randall Pkwy St 104
Address: Wilmington, NC 28403
Quote #: —

Project ID: Scotsman #38
Contact: Bryan Lievre
Phone: 910-772-2291
Fax: 910-254-0246

Date: 10-24-02
Turnaround: Standard
Job Number:
P.O. Number: —

Report To: Bryan Lievre
910-772-2291

Invoice To: Bryan Lievre

Sample ID	Date	Time	Matrix	Preservatives	Analyses: 5030/3550	Comments: Please specify any special reporting requirements
						6129-620
SW-13	10-24-02	959	S		1	
SW-14		1002			1	
SW-15		1005			1	
b-4		1010			1	
b-5		1015			1	
b-6		1020			1	
b-7		1022			1	
b-8		1024			1	
b-9		1026			1	
b-10		1028			1	

Relinquished By	Date	Time	Received By	Date	Time	Temperature
Edward Scott Conley	10-24-02	1630				
Phil King	10250-2	11:10	Carla Johnson	10/25/02	11:10	On Ice 0.2°

State Certification Requested
NC ____ SC ____ Other ____

SEE REVERSE FOR TERMS AND CONDITIONS

ORIGINAL

PARADIGM ANALYTICAL LABORATORIES, INC.
2627 Northchase Parkway SE, Wilmington, NC 28405
Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 20150

Page 4 of 4

Client: Delta Environmental Consultants
Address: 3205 Randall Pkwy, Ste 104
Address: Wilmington, NC 28403
Quote #: —

Project ID: Scotchman #38
Contact: Bryan Lievre
Phone: 910-772-2291
Fax: 910-254-0246

Date: 10-24-02
Turnaround: Standard
Job Number: —
P.O. Number: —

Report To: Bryan Lievre
910-772-2291

Invoice To: Bryan Lievre

Sample ID	Date	Time	Matrix	Preservatives	Analyses: 5030/3550	Comments: Please specify any special reporting requirements
b-11	10-24-02	1030	S		1	6129-620
b-12	↓	1032	↓		1	

Relinquished By	Date	Time	Received By	Date	Time	Temperature
Edward Scott Conley	10-24-02	1630				
Shelley	10-25-02	11:10	[signature]	10/25/02	11:10	on ice 0-2°C

State Certification Requested
NC ____ SC ____ Other ____

SEE REVERSE FOR TERMS AND CONDITIONS

ORIGINAL

SV

PHASE I
LIMITED SITE ASSESSMENT

SCOTCHMAN #38

FAYETTEVILLE, NORTH CAROLINA

WORSLEY COMPANIES, INC.

DELTA PROJECT NO. X0NC-057

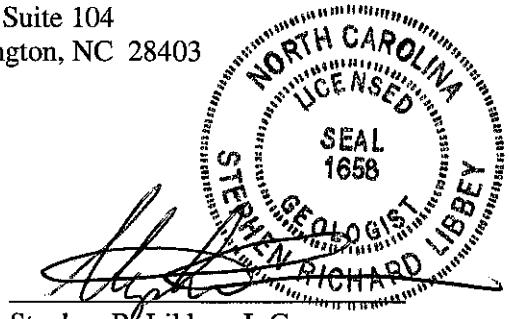
29017

PHASE II LIMITED SITE ASSESSMENT
SCOTCHMAN #38
6261 RAEFORD ROAD
FAYETTEVILLE, NORTH CAROLINA
MARCH 2003

Facility ID:	0-011379
Property Owner:	Worsley Companies, Inc. P.O. Box 3227 10 S. Cardinal Drive Wilmington, NC 2840
UST Owner (at time of release):	Worsley Companies, Inc. P.O. Box 3227 10 S. Cardinal Drive Wilmington, NC 28406 (910) 395-5300
Release Information:	Discovery Date: October 24, 2002, estimated quantity unknown. Cause of Release: UST system consisting of 1-4,000 gallon kerosene and 3-6,000 gallon gasoline USTs.
Latitude: Longitude:	35° 04' 27" N 79° 28' 53" W

Prepared for:
Worsley Companies, Inc.
P.O. Box 3227
Wilmington, NC 28406

Prepared by:
Delta Environmental Consultants, Inc.
3205 Randall Parkway
Suite 104
Wilmington, NC 28403



03/18/03

Stephen R. Libbey, L.G.
North Carolina Professional Geologist No. 1658

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PHASE I LIMITED SITE ASSESSMENT
SCOTCHMAN #38
6261 RAEFORD ROAD
FAYETTEVILLE, NORTH CAROLINA

On behalf of Worsley Companies, Inc. (WCI), Delta Environmental Consultants, Inc. (Delta) has prepared the following Limited Site Assessment (LSA) Report on assessment activities performed at the Scotchman Store #38 in Fayetteville, North Carolina. This report has been prepared pursuant to Title 15A of the North Carolina Administrative Code (NCAC), Chapter 2, Subchapter 2L, Section .0115 and in accordance with the *Guidelines for the Assessment and Corrective Action,* dated April 2001.

1.0 SITE HISTORY, SOURCE CHARACTERIZATION, AND TANK OWNERSHIP

1.1 Site History

The subject facility, Scotchman #38, is located at 6261 Raeford Road, Fayetteville, Cumberland County, North Carolina (**Figures 1 and 2**). The property, facility, and former underground storage tanks (USTs) relating to this LSA Report were previously owned and operated by WCI. The site was recently sold to Bill and Maria Pappas who are planning to operate a restaurant on the property.

On October 23 and 24, 2002, one-4,000 gallon kerosene and three-6,000 gallon gasoline USTs were removed from the subject facility. Soil samples were collected by Delta during tank removal activities. The soil samples were analyzed by EPA Methods 5030 and 3550 for gasoline and diesel range total petroleum hydrocarbons (TPH), respectively. Analyses of the soil samples confirmed the presence of petroleum hydrocarbon contamination in excess of North Carolina action levels. Historical analytical data for soil samples collected during the UST closure is presented in **Table 1**.

A UST Closure Report was submitted by Delta to the North Carolina Department of Environment and Natural Resources (DENR), Division of Waste Management on November 18, 2002. Based on the findings of the report, a Notice of Regulatory Requirements (NORR) was issued to WCI (responsible party) on November 22, 2002. The notice advised WCI of compliance requirements regarding a suspected release from the petroleum UST system. Pursuant to the NORR, a Limited Site Assessment was performed by Delta during the months of December 2002 and January and February 2003.

1.2 Source Characterization

Soil samples collected during UST removal activities confirmed a release from the UST system at the subject facility. The following table summarizes specific data on the former USTs:

UNDERGROUND STORAGE TANK DATA
SCOTCHMAN #38
6261 RAEFORD ROAD
FAYETTEVILLE, N.C.

Tank # **	Installation Date*	Size in Gallons	Tank Dimensions (Diameter x Length)	Last Contents	Date Closed
UST-1	04/01/1961	6,000	6' x 30'	Gasoline	10/24/2002
UST-2	04/01/1961	6,000	6' x 30'	Gasoline	10/23/2002
UST-3	04/01/1961	6,000	6' x 30'	Gasoline	10/23/2002
UST-4	03/26/1985	4,000	6' x 24'	Kerosene	10/23/2002
UST-5	04/01/1961	550	Unknown	Waste Oil	03/01/1984

*- Based on data obtained from the NCDENR registered tanks database.
** See Figure 2 for UST locations (The location of UST-5 is unknown and not shown on Figure 2).

1.3 Underground Storage Tank Ownership

Worsley Companies, Inc.
Post Office Box 3227
10 S. Cardinal Drive
Wilmington, North Carolina 28406
(910) 395-5300

2.0 METHODS OF LIMITED SITE ASSESSMENT ACTIVITIES

The activities performed to collect data for this LSA Report included researching site-specific, local and regional data, installing monitoring wells, performing soil sampling, performing groundwater sampling, and submitting soil and groundwater samples for analytical testing. The following sections discuss specific methodologies used in conducting these limited site assessment activities.

2.1 Review of Site-Specific, Local, and Regional Data

A review of available site-specific, local and regional data was performed to include:

- A well survey within a 1,500-foot radius of the subject facility, including a records inquiry, a letter survey, and a visual survey for water meters and pump houses.
- Identification of wellhead protection areas.

- Researching geology and hydrogeology of the region, including topography, soil types, and surface water drainage patterns.
- Identification of surface waters within a 1,500-foot radius of the subject facility.
- Land use observations (site reconnaissance) and zoning classifications.
- A visual survey for subsurface structures and potential impacts from the source area.
- Gathering information on adjacent property owners and occupants.

2.2 Monitoring Well Installations

On January 9, 2003, Delta personnel attempted to install two shallow Type II monitoring wells in the areas of highest known soil contamination adjacent to the easternmost gasoline dispenser (near UST closure soil sample D-2) and along the northeastern edge of Tank Basin #2. However, during the well installations, it was found that depth to water onsite was deeper than anticipated, and due to lack of well construction materials, the wells could not be completed on January 9, 2003. On February 5, 2003, Delta personal returned to the site and installed two Type II monitoring wells MW-1 and MW-2 in the same locations as previously described. The monitoring well locations are presented in **Figure 2.** The well construction records are presented in **Appendix A.**

2.3 Soil Sampling

Borehole logging was performed during the February 5, 2003 drilling for installation of the monitoring wells. The boring logs are presented in **Appendix B**. Soil sampling was performed during the January 9, 2003 initial drilling activities for monitoring wells MW-1 and MW-2. A total of seven soil samples were collected according to NCDENR guidelines from the monitoring well borehole associated with MW-1 at 2.5-3.0 feet, 8.0-8.5 feet, 13.0-13.5 feet, 17.0-17.5 feet, 25.0-25.5 feet, 35.0-35.5 feet and 43.5-44.0 feet intervals, until the water table was encountered at approximately 46.0 feet below ground surface (bgs). A total of five soil samples were collected according to NCDENR guidelines from the monitoring well borehole associated with MW-2 at 11.5-12.0 feet, 14.5-15.0 feet, 21.0-21.5 feet, 27.0-27.5 feet, and 38.0-38.5 feet intervals, until the water table was encountered at 40.0 feet. The soil samples collected from MW-1 and MW-2 were submitted for laboratory analyses by EPA Method 8260 (volatile organic compounds) and Massachusetts Department of Environmental Protection (MADEP) Methods for volatile petroleum hydrocarbons (VPH).

It is important to note that soil samples were not collected at the MW-2 borehole at less than 11.0 feet due to its close proximity to the backfilled UST Tank Pit #2; any soils collected at less than 11.0 feet would contain clean backfill soil and thus not be representative of onsite soils.

For the sample times and dates, please refer to the chain-of-custody presented in **Appendix C**. The soil sample analytical results are discussed in section 6.1 and are summarized in **Table 2**.

2.4 Groundwater Sampling

On February 10, 2003, Delta collected groundwater samples from monitoring wells MW-1 and MW-2. Before sample collection, depth to water measurements were recorded. Using the depth to groundwater measurements, purge volumes were calculated for monitoring wells MW-1 and MW-2, and a minimum of three well volumes was purged from each monitoring well.

Depth to groundwater measurements are summarized in **Table 3.** Sampling date, time and analytical methods are included on the chain-of-custody in **Appendix D.** Analytical results for the groundwater samples are presented in section 6.2 and are summarized in **Table 4.**

3.0 LIMITED SITE ASSESSMENT RISK CLASSIFICATION AND LAND USE

Part 1 – Groundwater/Surface water/Vapor Impacts

High Risk:

1. *Has the discharge or release contaminated any water supply well including any used for non-drinking purposes?* **NO**

   Based on data gathered to date, the discharge or release is not known to have contaminated water supply wells, including those used for non-drinking purposes.

2. *Is a water supply well used for drinking water located within 1,000 feet of the source area of the discharge or release?* **NO**

   Private water supply wells were not identified within 1,000 feet of the source area.

3. *Is a water supply well used for any purpose (e.g. irrigation, washing cars, industrial cooling water, filling swimming pools) located within 250 feet of the source area of the release or discharge?* **NO**

   No water supply wells were identified within 250 feet of the source area.

4. *Does groundwater within 500 feet of the source area of the discharge or release have the potential for future use in that there is no other source of water supply other than the groundwater?* **YES**

   Although water supply is provided by both local private and municipal systems, the source of the private system is groundwater. Currently the supply wells for this system are located outside of the 1,500-feet radius from the site; however, future wells could potentially be installed closer to the site.

5. *Do vapors from the discharge or release pose a threat of explosion because of accumulation of the vapors in a confined space or pose any other serious threat to public health, public safety, or the environment?* **NO**

   At the time of this assessment, there was no readily apparent evidence of impacts from the source area relating to the accumulation of vapors in confined spaces.

6. *Are there any other factors that would cause the discharge or release to pose an imminent danger to public health, public safety, or the environment?* **NO**

   No factors have been identified that appear to pose an imminent danger to public health, public safety, or the environment.

Intermediate Risk:

7. *Is a surface water body located within 500 feet of the source area of the discharge or release?* **NO**

   If yes, does the maximum groundwater contaminant concentration exceed the surface water quality standards and criteria found in 15A NCAC 2B .0200 by a factor of 10? **NO**

8. *Is the source area of the discharge or release located within a designated wellhead protection area as defined in 42 USC 300h-7(e)?* **NO**

   The source area is not located within a designated wellhead protection area as defined by 42 USC 300h-7(e).

9. *Is the discharge or release located in the Coastal Plain Physiographic Region as designated on a map entitled "Geology of North Carolina" published by the Department in 1985?* **YES**

   If yes, is the source area of the discharge or release located in an area in which there is recharge to an unconfined or semi-confined aquifer that is being used or may be used as a source of drinking water?

   Within 1,500 feet of the site, the surficial aquifer lies within 50 feet of ground surface, yielding sufficient water supply for domestic use. Groundwater is also drawn from lower aquifers in certain areas. Although the suspected source area is located where recharge to the surficial aquifer has the potential to occur, water from the surficial aquifer in this area is not likely to be used for potable water supplies.

10. *Do the levels of groundwater contamination for any contaminant exceed the gross contamination levels established by the Department?* **NO**

Part II – Land Use

Property Containing Source Area of Discharge or Release:

The questions below pertain to the property containing the source area of the release.

1. *Does the property contain one or more primary or secondary (permanent or temporary) residences?* **NO**

   The property does not contain primary or secondary residences.

2. *Does the property contain a school, daycare center, hospital, playground, park, recreation area, church, nursing home, or other place of public assembly?* **NO**

   The property does not contain places of public assembly. At this time the property contains an inactive convenience market and retail fuel outlet.

3. *Does the property contain a commercial (e.g. retail, warehouse, office/business space, etc.) or industrial (e.g., manufacturing, utilities, industrial research and development, chemical/petroleum bulk storage, etc.) enterprise, and inactive commercial or industrial enterprise, or is the land undeveloped?* **YES**

   The property contains an inactive convenience market and retail fuel outlet.

4. *Do children visit the property?* **NO**

5. *Is access to the property reliably restricted consistent with its use (e.g., by fences, security personnel or both)?* **NO**

   The property is not restricted with fence or security personnel.

6. *Do pavement, building, or other structures cap the contaminated soil?* **NO**

   The facility is partially covered with asphalt, concrete, gravel and a building. In the immediate vicinity of the former kerosene and gasoline USTs and dispensers, the surface is predominantly clean backfilled soil.

   If yes, what mechanisms are in place or can be put into place to ensure that the contaminated soil will remain capped in the foreseeable future? **NA**

7. *What is the zoning status of the property?*

   According to the City of Fayetteville Planning Office, the facility is zoned local business.

8. *Is the use of the property likely to change in the next 20 years?* **YES**

   At this time, the facility is an inactive convenience store and retail fuel outlet. The site was recently sold to Bill and Maria Pappas who are planning to operate a restaurant on the property in the near future.

   Property Surrounding Source Area of Discharge or Release:

   The questions below pertain to the area within 1,500 feet of the source area of the discharge or release (excludes property containing source area of the release):

9. *What is the distance from the source area of the release to the nearest primary or secondary residence (permanent or temporary)?*

   The nearest primary residence is located approximately 150 feet from the source area.

10. *What is the distance from the source area of the release to the nearest school, daycare center, hospital, playground, park, recreation area, church, nursing home, or other place of public assembly?*

    Places of public assembly are outlined under Section 4.7, Land Use.

11. *What is the zoning status of properties in the surrounding area?*

Based on information obtained from the City of Fayetteville Planning Department, the most of the commercial properties located in the vicinity of the site are zoned local business (C1), professional (P2), or shopping center district (C1P) and office/institutional (O and I), and the residential properties are zoned residential, primarily single family (R-10).

12. *Briefly characterize the use and activities of the land in the surrounding area.*

Land use in the immediate surrounding area predominantly consists commercial and residential properties.

4.0 RECEPTOR PATHWAY INFORMATION

As defined by NCDENR, a receptor is "any human, plant or animal that is or has the potential to be adversely affected by the release or migration of contaminants." With respect to the subject facility, the following sections present information regarding potential receptor pathways for the migration of contaminants and pathway relationships to the facility.

4.1 Water Supply Wells

In an effort to gather as complete and accurate data as possible, Delta mailed water supply well surveys to the property owners within a 500-foot radius of the subject facility. Property ownership was based on information obtained from the Cumberland County Tax and Mapping Offices. In addition, a windshield survey was performed within a 1,500-foot radius to identify water supply wells and public water usage.

The mail survey resulted in a 59 percent return on responses from the property owners. Based on the responses received, a water supply well location map has been prepared and is presented as **Figure 3.** Information collected during the mail-survey and windshield survey process revealed no private or municipal water supply wells were identified within a 1,500-foot radius of the site. The names and addresses of property owners, having properties located within 500 feet of the source area, along with the responses to the well supply survey have been tabulated and are presented in **Table 5.**

4.2 Public Water Supplies

Brookwood Water Corporation, Inc. (BWCI) and the City of Fayetteville provide public water to the property owners within a 1,500-foot radius of the site, however most of the property owners utilize BWCI. BWCI obtains its water supply from groundwater sources while the City of Fayetteville use surficial sources, specifically Glenville Lake and the Cape Fear River. According to Ms. Lynne Johnson, Area Manager for the BWCI, there are no BWCI operated water supply wells located within a 1,500-foot radius of the site. The water collected from BWCI's supply wells is tested, chlorinated and then redistributed to the area businesses and residences.

According to Ms. Amy Ratliff, Engineer II for the City of Fayetteville Public Works Commission (PWC), public water from the PWC is offered on a limited basis in the subject area at this time.

The surficial water collected from Glenville Lake is treated at the Glenville Lake Water Treatment Plant and the surficial water collected from the Cape Fear River is treated at the Hoffer Water Treatment Plant. After treatment, the water is redistributed to customers.

4.3 Surface Water Bodies

No surface water bodies were identified within a 1,500-foot radius of the site

4.4 Wellhead Protection Areas

At the time of this assessment, a designated wellhead protection area, as defined in 42 USC 300h-7(e), is not reported to exist within 1,500 feet of the source area.

4.5 Deep Aquifers in the Coastal Plain Province

The subject site is located within the Sand Hills subdivision of the Atlantic Coastal Plain Physiographic Province. The surficial aquifer is composed of grayish-brown coarse sand and gravel containing silt and kaolinitic material. Underlying the surficial aquifer is the Black Creek confining unit that is composed of clay, silty clay, and sand clay. The Black Creek confining unit is approximately 6 feet thick in this area of Cumberland County. Underlying the Black Creek confining unit is the Black Creek aquifer. The Black Creek aquifer in composed of thinly laminated gray to black clay interlayered with gray to tan sands. The upper Cape Fear confining unit underlies the Black Creek aquifer and is approximately 36 feet thick. The Upper Cape Fear confining unit in Cumberland County overlies the Upper Caper Fear aquifer. The Upper Cape Fear aquifer is composed of alternating beds of sand and clay that are approximately 88 feet thick.

4.6 Subsurface Structures

There is an onsite underground storm drain system, and underground water and telephone lines that run parallel to Raeford Road. Notwithstanding, there was no readily apparent evidence of potential impacts from the source area relating to the accumulation of vapors in confined spaces.

4.7 Land Use

Within a 1,500-foot radius of the subject facility, most of the land area is commercial and residential. Within the 1,500-foot radius, the distance to the places of public assembly include (with nearest distance in parentheses) are:

-A primary residence (150 feet)
-Brentwood Elementary School (1,450 feet South)
-Arran Lake Baptist Church (1,475 feet South)

4.8 Adjacent Property Owners and Occupants

The names and addresses of property owners, having properties located within 1,500 feet of the source area, have been tabulated and are presented in **Table 6**. Additionally, a cross-reference map depicting the locations of adjacent properties is presented in **Figure 3**.

5.0 SITE GEOLOGY AND HYDROGEOLOGY

5.1 Description of Shallow Subsurface Geology

The following table describes the soils encountered during the installation of monitor well MW-1:

Depth Below Ground Surface (ft)	Soil Description & Classification (USCS)
0.0-2.0	Concrete/Orange Clay Sand Fill (SC)
2.0-10.0	Brown Clayey Sand. (SC)
10.0-18.0	Orange Clayey Sand. Moist (SC).
18.0-35.0	Orange Sand, Medium Grain, Well Sorted. Dry (SW).
35.0-45.0	Orange Clayey Sand. Moist (SC).
45.0-55.0	Orange Sand, Medium Grain, Well Sorted. Moist (SC).

The boring logs are presented in **Appendix B**.

5.2 Groundwater Occurrence

On February 10, 2003, the water table was encountered at approximately 44.0 feet bgs during well sampling activities.

5.3 Groundwater Flow Direction

The Fayetteville Quadrangle (7.5 minute series topographic maps, U.S. Geological Survey-USGS, 1979) indicates a regional topography sloping eastward. Typically, the surficial groundwater flow direction is a subdued reflection of the topography; therefore, the regional groundwater flow would be expected to move generally eastward. Specific site information on groundwater flow could not be determined since only two monitoring wells were installed onsite.

5.4 Vertical Movement

Due to the fact that a vertical delineation well was not installed onsite, the potential for downward flow or vertical movement was not determined.

6.0 ANALYTICAL RESULTS

All soil and groundwater samples were submitted to Paradigm Analytical Laboratories, Inc. (Paradigm) of Wilmington, North Carolina. The following sections discuss the analytical data provided in the laboratory reports.

6.1 Soil Analytical Results

A total of twelve soil samples were collected (MW-1 (2.5-3.0'), MW-1 (8.0-8.5'), MW-1 (13.0-13.5'), MW-1 (17.0-17.5'), MW-1 (25.0-25.5'), MW-1 (35.0-35.5'), MW-1 (43.5-44.0'), MW-2 (11.5-12.0'), MW-2 (14.5-15.0'), MW-2 (21.0-21.5'), MW-2 (27.0-27.5'), and MW-2 (38.0-38.5')) and submitted for laboratory analyses during the Limited Site Assessment activities on January 9, 2003. The samples were obtained from the monitoring well boreholes for monitoring wells MW-1 and MW-2 during the initial drilling attempt. Laboratory results for soil samples MW-1 (2.5-3.0')

and MW-1 (8.0-8.5') reveal the presence of benzene at levels in excess of its respective soil-to-groundwater Maximum Soil Contaminant Concentration (MSCC). Analytical results indicate that the concentrations for the remaining target compounds are either below MSCCs or below the laboratory method detection limits.

Information on the sample collection protocol is presented in Section 2.2. Soil analytical results are presented in **Table 2**. The soil sample locations correspond to the monitoring well location number, as presented in **Figure 2**. The laboratory analytical report and chain-of-custody are presented in **Appendix C**.

6.2 Groundwater Analytical Results

Two groundwater samples (MW-1 and MW-2) were collected during the Phase I Limited Site Assessment activities. Information regarding the monitoring well installations and groundwater sampling protocol are provided in Sections 2.3 and 2.4, respectively.

During the Phase I LSA, the groundwater samples from MW-1 and MW-2 were submitted to the project laboratory for analyses by EPA Method 601/602 with xylenes, EPA Method 504.1 for ethylene dibromide, EPA Method 3030C for lead and MADEP Method for VPH.

The groundwater analytical results indicate that lead is the only target compound detected above its respective 2L groundwater standard in monitoring wells MW-1 and MW-2. However, the lead concentrations do not exceed ten times its respective 2L groundwater standard. Concentrations for the remaining target compounds are either below their respective 2L groundwater standards or below the laboratory method detection limits.

The analytical summary for groundwater samples is included in **Table 4** while the laboratory analytical report and chain-of-custody are presented in **Appendix D**.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

Based on data collected during the LSA activities, characterization of the source can be described as follows:

- The nearest primary residence exists approximately 150 feet from the source area. Land use observations indicate predominantly commercial and residential properties in proximity to the subject facility. According to the City of Fayetteville Planning Office, the land is zoned local business, professional, shopping center district, office/institutional, and single family residential.

- Businesses and residences are supplied by private or municipal water provided by the Brookwood Water Corporation Inc. or the City of Fayetteville. No private or municipal water supply wells were identified within 1,500 feet of the subject facility.

- No surface water bodies were identified within 1,500 feet of the site.

- There are no other known receptors which are or could be impacted by the release.
- Benzene was detected in excess of its respective soil-to-groundwater MSCC in the soil samples collected from monitoring well MW-1.
- Lead was detected in excess of its respective 2L groundwater standard, but less than 10 times the groundwater standard, in groundwater samples collected from monitoring wells MW-1 and MW-2.

7.2 Recommendations

Based on information obtained during this LSA, it appears the site should be assigned a land use classification of Residential and a priority risk classification of "Low Risk". Accordingly, and in order to expedite a case closure for the site, Delta herein recommends further soil assessment in order to prepare and submit a Soil Assessment Report (SAR) to the NCDENR.

8.0 LIMITATIONS

The recommendations contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by:

DELTA ENVIRONMENTAL CONSULTANTS, INC.

Monika Satterwhite
Staff Scientist

This report was reviewed by:

Stephen R. Libbey, L.G.
Project Manager

TABLE 1
SOIL ANALYTICAL RESULTS
UST CLOSURE
SCOTCHMAN #38
FAYETTEVILLE, NORTH CAROLINA
DELTA PROJECT NO. X0NC-057

Sample ID	Sample Date	Sample Depth (ft. bgs)	TPH-GRO (EPA 5030) (mg/kg)	TPH-DRO (EPA 3550) (mg/kg)
D-1	10/23/2002	1.5	**1,800**	**3,010**
D-2	10/23/2002	1.5	**4,000**	**4,220**
PL-1	10/23/2002	2	<6.7	**26**
SW-1	10/23/2002	4	<6.6	<6.8
SW-2	10/23/2002	4	<6.9	<7.2
SW-3	10/23/2002	4	<7.1	<7.4
SW-4	10/23/2002	4	<6.6	<6.5
SW-5	10/23/2002	4	<6.3	<6.2
SW-6	10/24/2002	4	<6.9	<7.2
SW-7	10/24/2002	4	<6.5	<6.3
SW-8	10/24/2002	3.5	<6.4	7.0
SW-9	10/24/2002	3.5	<6.6	<6.9
SW-10	10/24/2002	3.5	<6.5	<6.7
SW-11	10/24/2002	4	**51**	**567**
SW-12	10/24/2002	4	**10**	**51**
SW-13	10/24/2002	3.5	<6.7	<6.9
SW-14	10/24/2002	3.5	<6.7	<7.0
SW-15	10/24/2002	4	<6.7	<7.0
B-1	10/23/2002	9	<6.6	<6.6
B-2	10/23/2002	9	<6.7	<7.3
B-3	10/23/2002	9	<6.7	<6.8
B-4	10/24/2002	7	<7.0	<7.6
B-5	10/24/2002	7	<7.0	<6.5
B-6	10/24/2002	7	<7.0	<7.1
B-7	10/24/2002	7	<6.9	<7.0
B-8	10/24/2002	7	**700**	**2,380**
B-9	10/24/2002	7	**1,900**	**1,620**
B-10	10/24/2002	7	**210**	**840**
B-11	10/24/2002	7	**850**	**1,000**
B-12	10/24/2002	7	**1,200**	**1,990**
NC Action Levels			**10**	**10**

Notes:

1) *ft. bgs. denotes feet below ground surface*
2) *mg/kg denotes milligrams per kilogram*
3) *All results in **BOLD** exceed Action Levels*
4) *TPH-GRO denotes Total Petroleum Hydrocarbons-Gasoline Range Organi*
5) *TPH-DRO denotes Total Petroleum Hydrocarbons-Diesel Range Organics*

TABLE 2
SOIL ANALYTICAL RESULTS
Scotchman #3
Fayetteville, North Carolina
Delta Project No. X0NC-057

Sample ID	MW-1 (2.5-3.0')	MW-1 (8.0-8.5')	MW-1 (13.0-13.5')	MW-1 (17.0-17.5')	MW-1 (25.0-25.5')	MW-1 (35.0-35.5')	
Sample Date	1/9/2003	1/9/2003	1/9/2003	1/9/2003	1/9/2003	1/9/2003	
Sample Depth (feet)	2.5-3.0	8.0-8.5	13.0-13.5	17.0-17.5	25.0-25.5	35.0-35.5	
PID (ppm)	NA	NA	NA	NA	NA	NA	
Analyses	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	*Soil-to-Water MSCC ug/Kg*
Target Compounds	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	
BENZENE	**20**	**<5.8**	<5.5	<5.2	<5.6	<5.6	5.6
TOLUENE	12	<5.8	<5.5	<5.2	<5.6	<5.6	7,000
ETHYLBENZENE	16	<5.8	<5.5	<5.2	<5.6	<5.6	240
XYLENES	52.5	<17.8	<17.5	<15.2	<16.6	<16.6	5,000
1,2,3-TRICHLOROPROPANE	24	<5.8	<5.5	<5.2	<5.6	<5.6	NG
1,3,5-TRIMETHYLBENZENE	<5.7	<5.8	<5.5	<5.2	<5.6	<5.6	7,000
1,2,4-TRIMETHYLBENZENE	15	<5.8	<5.5	<5.2	<5.6	<5.6	8,000
DIISOPROPYL ETHER (DIPE)	<5.7	<5.8	<5.5	<5.2	<5.6	<5.6	370
1.2-DIBROMETHANE (EDB)	<5.7	<5.8	<5.5	<5.2	<5.6	<5.6	0.00197
METHYL-TERT-BUTYL ETHER (MTBE)	**16**	<5.8	<5.5	<5.2	<5.6	<5.6	920
NAPHTHALENE	<5.7	<5.8	<5.5	<5.2	<5.6	<5.6	580
C5-C8 ALIPHATICS	<10	<10	<10	<10	<10	<10	72,000
C9-C12 ALIPHATICS	<10	<10	<10	<10	<10	<10	3,255,000
C9-C10 AROMATICS	<10	<10	<10	<10	<10	<10	34,000

Notes:
PID -Photo-Ionization Detector
PPM - Parts Per Million
ug/Kg - Micrograms per Kilogram (or approximately parts per billion)
Bold Numbers indicate values exceeding the soil-to-groundwater maximum contaminant concentrations
NG - No value given
No other compounds were detected above quantification limits.

TABLE 2
SOIL ANALYTICAL RESULTS
Scotchman #3
Fayetteville, North Carolina
Delta Project No. X0NC-057

Sample ID	MW-1 (43.5-44.0')	MW-2 (11.5-12.0')	MW-2 (14.5-15.0')	MW-2 (21.0-21.5')	MW-2 (27.0-27.5')	MW-2 (38.0-38.5')	
Sample Date	1/9/2003	1/9/2003	1/9/2003	1/9/2003	1/9/2003	1/9/2003	
Sample Depth (feet)	43.5-44.0	11.5-12.0	14.5-15.0	21.0-21.5	27.0-27.5	38.0-38.5	
PID (ppm)	NA	NA	NA	NA	NA	NA	
Analyses	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	EPA Methods 8260 and MADEP-VPH	
Target Compounds	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	Compound Concentrations *ug/Kg*	*Soil-to-Water MSCC ug/Kg*
BENZENE	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	5.6
TOLUENE	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	7,000
ETHYLBENZENE	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	240
XYLENES	<16.5	<16.7	<16.3	<16.6	<16.7	<16.5	5,000
1,2,3-TRICHLOROPROPANE	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	NG
1,3,5-TRIMETHYLBENZENE	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	7,000
1,2,4-TRIMETHYLBENZENE	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	8,000
DIISOPROPYL ETHER (DIPE)	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	370
1.2-DIBROMETHANE (EDB)	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	0.00197
METHYL-TERT-BUTYL ETHER (MTBE)	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	920
NAPHTHALENE	<5.5	<5.7	<5.3	<5.6	<5.7	<5.5	580
C5-C8 ALIPHATICS	<10	<10	<10	<10	<10	<10	72,000
C9-C12 ALIPHATICS	<10	<10	<10	<10	<10	<10	3,255,000
C9-C10 AROMATICS	<10	<10	<10	<10	<10	<10	34,000

Notes:
PID -Photo-Ionization Detector
PPM - Parts Per Million
ug/Kg - Micrograms per Kilogram (or approximatly parts per billion)
Bold Numbers indicate values exceeding the soil-to-groundwater maximum contaminant concentrations
NG - No value given
No other compounds were detected above quantification limits.

TABLE 3
WATER LEVEL DATA
Scotchman #38
Fayetteville, North Carolina
Delta Project No. X0NC-057

WELL ID	SCREENED INTERVAL (ft bgs)	TOC ELEVATION (ft)	DATE MEASURED	DEPTH TO WATER (ft)
MW-1	35-55	NA	2/10/2003	44.71
MW-2	35-55	NA	2/10/2003	44.48

Notes:
ft bgs- feet below ground surface.
Depth to water is measured from top of well casing TOC.
NA - Not Applicable

TABLE 4
GROUNDWATER ANALYTICAL RESULTS
SCOTCHMAN #38
FAYETTEVILLE, NORTH CAROLINA
DELTA PROJECT NO. X0NC-057

Sample ID	MW-1	MW-2	
Sample Date	2/10/2003	2/10/2003	
Analyses	EPA Methods 601/602, 504.1, 3030C, & MADEP-VPH.	EPA Methods 601/602, 504.1, 3030C, & MADEP-VPH.	*2L Groundwater Quality Standards*
Target Compounds	Compound Concentrations (ug/L)	Compound Concentrations (ug/L)	
Benzene	<1	<1	1
Toluene	<1	<1	1,000
Ethylbenzene	<1	<1	29
Xylenes	<4	<4	530
Methyl-tert-btyl-ether	3.6	3.7	200
Diisopropyl ether	<1	<1	70
Ethylene Dibromide	<0.02	<0.02	0.0004
Lead	**44.0**	**24.1**	15
C5-C8 Aliphatics	<100	<100	420
C9-C12 Aliphatics	<100	<100	4,200
C9-C10 Aromatics	<100	<100	210

Notes:

*1) **Bold** Numbers indicate values exceeding 2L groundwater standards.*

2) ug/L denotes micrograms per liter (or approximatly parts per billion).

TABLE 5
ADJACENT PROPERTY OWNERS AND WELL SURVEY INFORMATION (500-FOOT RADIUS)
(LIMITED SITE ASSESSMENT)
Scotchman #38
Fayetteville, North Carolina
Delta Project # X0NC-057

PIN	OWNER NAME	OWNER ADDRESS	CITY	ZIP	PUBLIC WATER Y/N	SUPPLY WELL Y/N	Well Usage
0407-40-0340	Peeples, Johnie Brooks	PO Box 41903	Fayetteville, NC	28309	Y	N	NA
0407-40-0572	ZP #15 LLC	PO Box 2628	Wilmington, NC	28402	Y	N	NA
0407-40-0739	Time Warner Entertainment	PO Box 6659	Englewood, CO	80155	NR	NR	NA
0407-40-1480	Sampson, Craig	910 Bingham Dr	Fayetteville, NC	28304	Y	N	NA
0407-40-2143	Chabot, Louise W	1002 Bingham Dr	Fayetteville, NC	28304	Y	N	NA
0407-40-2209	Dallas, Fred Pauldee and Wife	916 Bingham Dr	Fayetteville, NC	28304	Y	N	NA
0407-40-2953	Clodfelter, Dwane D	2320 Willoughby Dr	Fayetteville, NC	28301	NR	NR	NA
0407-40-4188	Stewart, John and Edna L.	1003 Bingham Dr	Fayetteville, NC	28304	Y	N	NA
0407-40-4432	Pappas, Maria G	304 Owen Dr	Fayetteville, NC	28304	Y	N	NA
0407-40-4614	Worsley Companies, Inc.	PO Box 3227	Wilmington, NC	27712	NR	NR	NA
0407-40-5462	Anderson, Roger M and Wife	1005 Arberdale Dr	Fayetteville, NC	28304	Y	N	NA
0407-40-6232	McKee, John Kenneth and Wife	1002 Arberdale Dr	Fayetteville, NC	28304	Y	N	NA
0407-40-6510	Johnson, Mary A	6206 E Darrow Dr	Fayetteville, NC	28304	NR	NR	NA
0407-40-6596	Holthe, Ingelore	6204 Darrow Dr	Fayetteville, NC	28304	Y	N	NA
0407-40-6732	Downing, Tildon W and Robert E	PO Box 53387	Fayetteville, NC	28303	Y	N	NA
0407-40-7796	Girdwood, Richard	3301 Jura Dr	Fayetteville, NC	28303	Y	N	NA
0407-40-8312	Floyd, Steve	5416 Raeford Rd	Fayetteville, NC	28304	Y	N	NA
0407-40-8651	Downing, Henry L and Wife	6202 E. Darrow Dr	Fayetteville, NC	28304	NR	NR	NA
0407-40-9328	Bascombe, David D	6203 E Darrow Dr	Fayetteville, NC	28304	NR	NR	NA
0407-40-9544	McDaniel, WM E and Wife	6201 Darrow Dr	Fayetteville, NC	28304	NR	NR	NA
0407-41-0490	Gillis, M D	49444 River Run Road	Albermarle, NC	28001	NR	NR	NA
0407-41-5748	Tollison, Sarah Williams	3018 Lake Forest Dr	Greensboro, NC	27408	NA (Vacant Lot)	N	NA

Notes:
NR = No Response to Well Survey
NA = Not Applicable

TABLE 6
ADJACENT PROPERTY OWNERS (1,500-FOOT RADIUS)
(LIMITED SITE ASSESSMENT)
Scotchman #38
Fayetteville, North Carolina
Delta Project # X0NC-057

PIN	OWNER NAME	OWNER ADDRESS	CITY	ZIP
0406-39-2665	STEWART, PETER B & WIFE	539 BRAGG BLVD	FAYETTEVILLE, NC	28301
0406-39-6149	THOMAS, RAYMOND CARROL	PO BOX 43036	FAYETTEVILLE, NC	28309
0406-39-9381	CLARK, JOHNNY DALE	PO BOX 918	UNADILLA, GA	31091
0406-39-9602	CARROLL RENTALS LLC	PO BOX 43036	FAYETTEVILLE, NC	28309
0406-49-0175	BELL, HAROLD STEPHEN & WIFE	5800 VALHALLA CT	FAYETTEVILLE, NC	28304
0406-49-0234	MARKET HOUSE HOLDINGS	PO BOX 53329	FAYETTEVILLE, NC	28305
0406-49-1435	MELANSON, LINDA W`	1101 THORNWOOD PL	FAYETTEVILLE, NC	28304
0406-49-1725	THOMAS, ALEXANDER H	PO BOX 43036	FAYETTEVILLE, NC	28309
0406-49-1913	THOMAS, ALEXANDER H	PO BOX 43036	FAYETTEVILLE, NC	28309
0406-49-2176	JEFFERSON, LORETTA	1117 THORNWOOD PL	FAYETTEVILLE, NC	28304
0406-49-2254	BUNBURY, NAADIRA A & HUSBAND	1113 THORNWOOD PL	FAYETTEVILLE, NC	28304
0406-49-2332	STAPLES, JOHN & WIFE DONNA	1109 THORNWOOD PL	FAYETTEVILLE, NC	28304
0406-49-2433	PRUITT, FREDERICK D. JR & WIFE	1105 THORNWOOD PL	FAYETTEVILLE, NC	28304
0406-49-2984	DUCK, FORNEY R	1428 PAISLEY AVE	FAYETTEVILLE, NC	28304
0406-49-3484	WIGGINS, PAMELA J & CEDERIC	1030 BINGHAM	FAYETTEVILLE, NC	28304
0406-49-3644	SIMMONS, SHELVA J	1022 BINGHAM DR	FAYETTEVILLE, NC	28304
0406-49-3804	WEBBER, DORIS J	1014 BINGHAM DR	FAYETTEVILLE, NC	28304
0406-49-4145	EDWARDS, JOSEPH R. JR	1104 BINGHAM DR	FAYETTEVILLE, NC	28304
0406-49-4225	LOPER, JOHN M & JEWELL h.	5604 THORNWALL CT	FAYETTEVILLE, NC	28304
0406-49-4305	PITTMAN, BRUCE H & WIFE KAREN	1034 BINGHAM DR	FAYETTEVILLE, NC	28304
0406-49-5683	ATHERTON, JOE F & LILIAN M	1029 BINGHAM DR	FAYETTEVILLE, NC	28304
0406-49-5759	GIBSON, LILO R	1017 BINGHAM DR	FAYETTEVILLE, NC	28304
0406-49-5839	DONOVAN, JOHN PATRICK	7513 MCFRENCH DR	FAYETTEVILLE, NC	28311
0406-49-5918	WRIGHT, BOBBY R. & MARTHA	1011 BINGHAM DR	FAYETTEVILLE, NC	28304
0406-49-6263	DAVIS, HUGH SMITH	1101 BINGHAM DR	FAYETTEVILLE, NC	28304
0406-49-6431	MEADOWS, CLAUDE M & WIFE	1033 BINGHAM DR	FAYETTEVILLE, NC	28304
0406-49-6992	SPAIN, ELTA GIBSON	1008 ARBERDALE DR	FAYETTEVILLE, NC	28304
0406-49-7275	ARROYO, DAVID & NORMA M.	6217 MCDOUGAL DR	FAYETTEVILLE, NC	28304
0406-49-7457	CASTEN, DEBORAH A & HUSBAND	6216 MCDOUGAL DR	FAYETTEVILLE, NC	28304
0406-49-7633	JUMALON, JAMES & WIFE	1015 ARBERDALE DR	FAYETTEVILLE, NC	28304
0406-49-7812	SOMERVILLE, CHRISTOPHER D.	1010 ARBERDALE DR	FAYETTEVILLE, NC	28304
0406-49-8241	BRYANT, EDWEARD LEE & WIFE	6211 MCDOUGAL DR	FAYETTEVILLE, NC	28304
0406-49-8458	PATTERSON, DEBRA M	6214 MCDOUGALD DR	FAYETTEVILLE, NC	28304
0406-49-8666	HARRIS, CLEVESTER JR & WIFE	1013 ARBERDALE DR	FAYETTEVILLE, NC	28304
0406-49-8995	ROCKWELL, DAVID G	1009 ARBERDALE DR	FAYETTEVILLE, NC	28304
0406-49-9139	SWAN, MORRIS R	6317 KINCROSS AVE	FAYETTEVILLE, NC	28304

TABLE 6
ADJACENT PROPERTY OWNERS (1,500-FOOT RADIUS)
(LIMITED SITE ASSESSMENT)
Scotchman #38
Fayetteville, North Carolina
Delta Project # X0NC-057

PIN	OWNER NAME	OWNER ADDRESS	CITY	ZIP
0406-49-9376	WILLIAMS, KAREN LYNN	6208 MCDOUGAL DR	FAYETTEVILLE, NC	28304
0406-49-9401	BOKKEAN, PETER B & WIFE	6212 MCDOUGAL DR	FAYETTEVILLE, NC	28304
0406-49-9801	JACKSON, JOHNNIE RAY & WIFE	1011 ARVERDALE DR	FAYETTEVILLE, NC	28304
0406-59-0356	MCKOY, ALVIS & WIFE	6204 MCDOUGAL DR	FAYETTEVILLE, NC	28304
0406-59-0421	DOSSER, EARL L	1102 THORNWOOD PL	FAYETTEVILLE, NC	28304
0406-59-0425	MILLER, KENNETH MELVIN JR	1088 REVERE ST	FAYETTEVILLE, NC	28304
0406-59-0522	DAVIS, DANIEL H	1084 REVERE ST	FAYETTEVILLE, NC	28304
0406-59-0528	DUNNING, KATHLEEN G.	1080 REVERE ST	FAYETTEVILLE, NC	28303
0406-59-0731	GARDNER, HELEN P LIFE ESTATE	1072 REVERE ST	FAYETTEVILLE, NC	28304
0406-59-0758	GARDNER, HELEN P LIFE ESTATE	1072 REVERE ST	FAYETTEVILLE, NC	28304
0406-59-0844	SCHANTZ, EDWARD C. JR. & WIFE	1670 GREENOCK AVE	FAYETTEVILLE, NC	28304
0406-59-0951	JONES, WANDA VICTORIA	1060 REVERE ST	FAYETTEVILLE, NC	28304
0406-59-0957	JONES, BRYAN JEFFREY & WIFE	00105 REVERE ST	FAYETTEVILLE, NC	28304
0406-59-1395	BAIN, TRACY L & WIFE	6114 MCDOUGAL DR	FAYETTEVILLE, NC	28303
0406-59-2364	SHERRILL, ROBERT S. *& WIFE EDNA	6110 MCDOUGAL DR	FAYETTEVILLE, NC	28304
0406-59-2434	ROYAL, SANDRA R	1087 REVERE ST	FAYETTEVILLE, NC	28304
0406-59-2541	HOLLYFIELD, ELIZABETH WILSON	1083 REVERE ST	FAYETTEVILLE, NC	28304
0406-59-2547	SCHANTZ, EDWARD C. JR & WIFE	1670 GREENOCK AVE	FAYETTEVILLE, NC	28304
0406-59-2654	FRANCIS, BILLY L	1075 REVERE ST	FAYETTEVILLE, NC	28304
0406-59-2750	HOFFMAN, TERENCE M. & PAUL	22 S PENDLETON	FREDERICK, MD	21702
0406-59-2757	TYNDALL, ROBERT K	1067 REVERE ST	FAYETTEVILLE, NC	28304
0406-59-2863	FISHER, DENLEY S	1063 REVERE ST	FAYETTEVILLE, NC	28304
0406-59-2960	DUNNING, KATHLEEN G.	1080 REVERE ST	FAYETTEVILLE, NC	28304
0406-59-2976	MORTON, DANIEL T & WIFE EVA L	1055 REVERE ST	FAYETTEVILLE, NC	28304
0406-59-3493	HAIRE, HUGH R. JR & LULA H	4427 WELLINGTON DR	FAYETTEVILLE, NC	28314
0406-59-3590	BOWER, GREGORY ALAN SR	1084 RULNICK ST	FAYETTEVILLE, NC	28304
0406-59-3596	ENTRUST ADMINISTRATION IRA	101 SIESTA TR	ROSCOMMON, MI	48653
0406-59-3724	FORD, LILLIE WALKER	1018 BINGHAM DR.	FAYETTEVILLE, NC	28304
0406-59-4602	HOFF, PAMELA S	1076 RULNICK ST	FAYETTEVILLE, NC	28303
0406-59-4608	GRANT, JOSHUA R & WIFE	1072 RULNICK ST	FAYETTEVILLE, NC	28304
0406-59-4811	SMITH, DELORES A	1066 RULNICK ST	FAYETTEVILLE, NC	28304
0406-59-4828	VEGA, JAIME ARROYO & WIFE	1062 RULNICK ST	FAYETTEVILLE, NC	28304
0406-59-4915	COUNCIL, LEE THOMAS & JEANETTE	3310 LAKE BEND DR	FAYETTEVILLE, NC	28311
0406-59-4924	SMITH, JOEL K	1058 RULNICK ST	FAYETTEVILLE, NC	28304
0406-59-6502	ATHERTON, JOE F & LILIAN M	1029 BINGHAM DR	FAYETTEVILLE, NC	28304
0406-59-6724	MANNING INVESTMENT GROUP, LLC	PO BOX 9746	FAYETTEVILLE, NC	28302

TABLE 6
ADJACENT PROPERTY OWNERS (1,500-FOOT RADIUS)
(LIMITED SITE ASSESSMENT)

Scotchman #38
Fayetteville, North Carolina
Delta Project # X0NC-057

PIN	OWNER NAME	OWNER ADDRESS	CITY	ZIP
0406-59-6834	CASTEN, DEBORAH A & HUSBAND	1059 RULNICK AVE	FAYETTEVILLE, NC	28304
0407-10-9126	MCMILLAN SHULER OIL CO	PO BOX 590	FAYETTEVILLE, NC	28302
0407-21-9170	BREWER, ELAINE	PO BOX 40141	FAYETTEVILLE, NC	28309
0407-30-0505	ROGERS & BREECE, INC.	PO BOX 135	FAYETTEVILLE, NC	28302
0407-30-0724	POWELL, JOEL T. LIFE ESTATE	1813 SEABROOK RD	FAYETTEVILLE, NC	28301
0407-30-0911	HAWKINS, RUBY MCGREGORY	7304 HYANNIS DR	FAYETTEVILLE, NC	28304
0407-30-1290	STEWART, PETER B & WIFE	539 BRAGG BLVD	FAYETTEVILLE, NC	28301
0407-30-1954	OWENS, RAY	6322 BEAUCHAMP DR	HOPE MILLS, NC	28348
0407-30-2720	ROGERS & BREECE, INC.	500 RAMSEY ST	FAYETTEVILLE, NC	28301
0407-30-3904	OWENS, GERALD RAY	6322 BEAUCHAMP DR	HOPE MILLS, NC	28348
0407-30-4217	SPEARS DEVELOPMENT CORPORATION	6325 RAEFORD DR	FAYETTEVILLE, NC	28314
0407-30-5363	SPEARS DEVELOPMENT CORPORATION	PO BOX 349	FAYETTEVILLE, NC	28302
0407-30-5808	HENDRIX, DAVID A. & WIFE	130 BARCROFT CT	SOUTHERN PINES	28387
0407-30-7064	AGAPION, BILL & SOPHIA	625 ELM ST	GREENSBORO, NC	27401
0407-30-7776	PAGE, ARNOLD & WIFE	2117 CRYSTAL SPRINGS RD	FAYETTEVILLE, NC	28306
0407-30-7952	MENDELSOHN, GARYL LEE	102 LAMB ST	FAYETTEVILLE, NC	28305
0407-30-8432	AGAPION, BILL & SOPHIA	625 ELM ST	GREENSBORO, NC	27401
0407-31-1131	SNYDER, EDWARD, SCOTT & WIFE	6793 SEAFORD DR	FAYETTEVILLE, NC	28314
0407-31-1207	FRAZIER, JEANETTE D.	6337 GINGER CIRCLE	FAYETTEVILLE, NC	28314
0407-31-1444	MILES, JAMES	6405 FREDRICK ST	FAYETTEVILLE, NC	28314
0407-31-3027	TALLY, D.F. III& WIFE	4711 CRISS DR	FAYETTEVILLE, NC	28303
0407-31-3237	INGRAM, RONALD & WIFE PAMELA R.	1184 CENTRE PKY	LEXINGTON, KY	40517
0407-31-3345	ARES, MARIO & WIFE LOIS E.	5349 AMBERHILL CT	FAYETTEVILLE, NC	28311
0407-31-3442	WILLIAMS, LINWOOD M. & WIFE LOL	6340 GINGER CIR	FAYETTEVILLE, NC	28314
0407-31-3540	MCCORMICK, GEORGE R.	3600 STURBRIDGE DR	HOPE MILLS, NC	28348
0407-31-3558	MCCORMICK, GEORGE R.	3600 STURBRIDGE DR	HOPE MILLS, NC	28348
0407-31-3655	BOBBITT., MIKE E.	342 DEVANE ST	FAYETTEVILLE, NC	28305
0407-31-5207	YATES, JAMES L.	PO BOX 53336	FAYETTEVILLE, NC	28305
0407-31-6881	RUDD, JESSE B & WIFE	2804 LITTLE DR	FAYETTEVILLE, NC	28314
0407-31-7066	BASS, GLENN W & WIFE	509 CAPE FEAR AVE	FAYETTEVILLE, NC	28303
0407-31-7166	FILIPKOWSKI, REGINA M.	PO BOX 2021	FAYETTEVILLE, NC	28302
0407-31-7166	WEBB, MICHELLE L. & HUSBAND	2835 LITTLE DR	FAYETTEVILLE, NC	28301
0407-31-7371	BESS, ALTON J.	2815 LITTLE DR	FAYETTEVILLE, NC	28304
0407-31-7486	GORDON GROUP, LLC.	2805 LITTLE DR	FAYETTEVILLE, NC	28314
0407-40-0078	BURWICK, KYLE L	206 MCPHERSON CHURCH RD	FAYETTEVILLE, NC	28303
0407-40-2064	RODRIGUEZ, ERIKA E	1006 BINGHAM DR	FAYETTEVILLE, NC	28304

TABLE 6
ADJACENT PROPERTY OWNERS (1,500-FOOT RADIUS)
(LIMITED SITE ASSESSMENT)

Scotchman #38
Fayetteville, North Carolina
Delta Project # X0NC-057

PIN	OWNER NAME	OWNER ADDRESS	CITY	ZIP
0407-40-4098	SHIMKO, EDWARD T. SR	1007 BINGHAM DR	FAYETTEVILLE, NC	28304
0407-40-6072	JACKSON, CURTIS W. & WIFE	1006 ARBERDALE RD	FAYETTEVILLE, NC	28304
0407-40-6151	SEVIER, MERLE F	1004 ARBERDALE DR	FAYETTEVILLE, NC	28304
0407-40-8085	PARRISH, JERRY & WIFE LINDA	179 DUCK LANE	SANFORD, NC	27330
0407-40-8184	ANDERSON, ROGER MARTIN	1005 ARBERDALE DR	FAYETTEVILLE, NC	28304
0407-40-8272	MAGWOOD, CARLOS J & WIFE	1003 ABERDALE	FAYETTEVILLE, NC	28304
0407-50-0053	ALBERT, CAROL M	1052 REVERE ST	FAYETTEVILLE, NC	28304
0407-50-0069	HUFF, TRACY N	1048 REVERE ST	FAYETTEVILLE, NC	28302
0407-50-0165	PRICE, IRMGARD R	1042 REVERE ST	FAYETTEVILLE, NC	28304
0407-50-0272	WEICHT, HARRY E	1040 REVERE ST	FAYETTEVILLE, NC	28304
0407-50-0278	COLLIER, MICHAEL W & WIFE	1280 GREENBRIAR DR	VASS, NC	28394
0407-50-0385	WARNER, JAN S	2702 GREENBAY RD	FAYETTEVILLE, NC	28303
0407-50-0481	ALTMAN, FRANK	8202 WELLINGTON PL	JESSUP, MD	20794
0407-50-0497	MIDDLETON, RICHARD L. JR & WIFE	1024 REVERE ST	FAYETTEVILLE, NC	28304
0407-50-0594	MCDONOUGH, BERNARD T.	919 NORWOOD ST	FAYETTEVILLE, NC	28305
0407-50-1601	GREAT SOUTHEASTERN PROPERTIES	PO BOX 58375	FAYETTEVILLE, NC	28305
0407-50-2072	SHERRIN, MATTHEW JAMES	1051 REVERE ST	FAYETTEVILLE, NC	28304
0407-50-2079	BILIOURIS, CHRISILIOS & WIFE	7189 EVANSTON ST	FAYETTEVILLE, NC	28314
0407-50-2185	BROWN, GLORIA J	1043 REVERE ST	FAYETTEVILLE, NC	28304
0407-50-2282	TURNER, GLENN & WIFE	1039 REVERE ST	FAYETTEVILLE, NC	28304
0407-50-2298	CZOLE, RONALD R	1035 REVERE ST	FAYETTEVILLE, NC	28304
0407-50-2395	DANCAROL REAL ESTATE LIMITED	PO BOX 53309	FAYETTEVILLE, NC	28305
0407-50-3403	SCHANTZ, EDWARD JR	1670 GRENNOCK AVE	FAYETTEVILLE, NC	28304
0407-50-3502	HYATT, VICTOR LEE	1019 REVERE	FAYETTEVILLE, NC	28304
0407-50-3610	YODER, ROBERTA R. & HUSBAND	3206 ROUSE DR	FAYETTEVILLE, NC	28306
0407-50-3852	AMERICAN CABLEVISION OF CAROLINA	PO BOX 6659	ENGLEWOOD, CO	80155
0407-50-4020	ADAMS, SUDIE	4311 DELMAR AVE	TEMPLE HILLS, MD	20748
0407-50-4036	HARDY, WILLIAM HENRY	5402 BROOKFIELD RD	FAYETTEVILLE, NC	28303
0407-50-4132	DICKERMAN, THOMAS EATON	1046 RULNICK ST	FAYETTEVILLE, NC	28304
0407-50-4149	WARNER, JAN & PHYLLIS A	2702 GREENBAY RD	FAYETTEVILLE, NC	28303
0407-50-4245	PULLEN, CAROLYN W	1038 RULNICK	FAYETTEVILLE, NC	28304
0407-50-4341	HARTNESS, SKIPPER A & WIFE	415 CANADY RD	PARKTON, NC	28371
0407-50-4358	NELSON, BRYCE C. & WIFE	2814 CEDAR TRAIL	WINGATE, NC	28174
0407-50-4454	WASHINGTON, BENJIMEN	3915 DAYTONA	FAYETTEVILLE, NC	28311
0407-50-4561	TEW, PEGGY J.	1022 RULNICK ST	FAYETTEVILLE, NC	28304
0407-50-4567	PITTMAN, MARGARET M.	5333 DAIRY DR	FAYETTEVILLE, NC	28304

TABLE 6
ADJACENT PROPERTY OWNERS (1,500-FOOT RADIUS)
(LIMITED SITE ASSESSMENT)

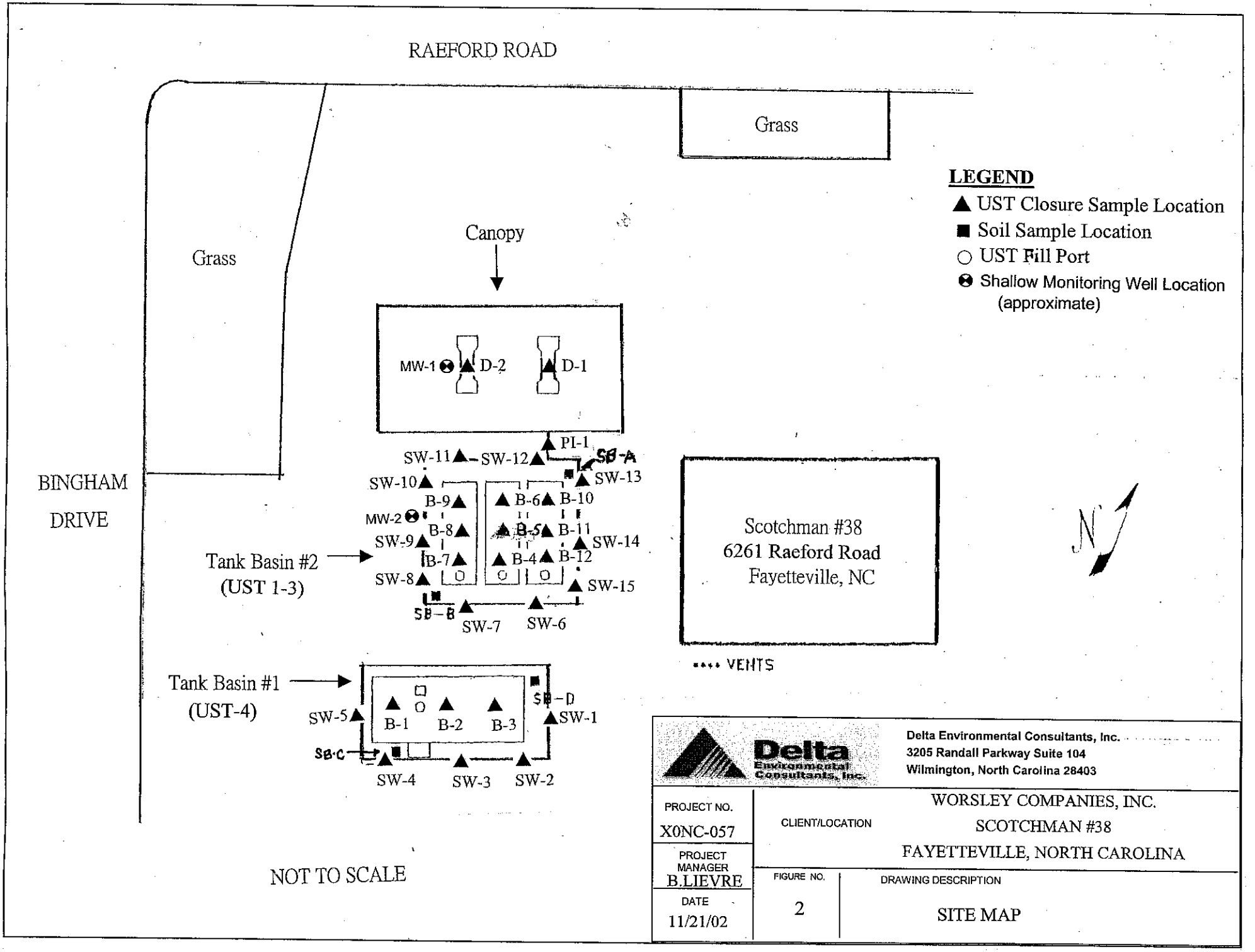
Scotchman #38
Fayetteville, North Carolina
Delta Project # X0NC-057

PIN	OWNER NAME	OWNER ADDRESS	CITY	ZIP
0407-50-5810	TIME WARNER ENTERTAINMENT	PO BOX 6659	ENGLEWOOD, CO	80155
0407-50-6153	MANNING INVESTMENT GROUP, LLC	PO BOX 9746	FAYETTEVILLE, NC	28302
0407-50-6574	LILES, CLAUDE E	1021 RULNICK ST	FAYETTEVILLE, NC	28304
0407-50-7591	LILES, TIMOTHY	3311 SYMPHONY CT	FAYETTEVILLE, NC	28301
0407-50-7811	ALLEN, BRUCE K	1137 THORNWOOD PL	FAYETTEVILLE, NC	28304
0407-51-2255	TIME WARNER ENTERTAINMENT	PO BOX 6659	ENGELWOOD, CO	80155
0406-49-3564	SCHANTZ, EDWARD C. JR & WIFE	1670 GREENOCK AVE	FAYETTEVILLE, NC	28403
0406-59-0635	FAYETTEVILLE METROPOLITAN	PO BOX 2349	FAYETTEVILLE, NC	28302
0406-59-6614	MANNING INVESTMENT GROUP, LLC	PO BOX 9746	FAYETTEVILLE, NC	28302
0407-40-0340	PEEPLES, JOHNIE BROOKS	PO BOX 41903	FAYETTEVILLE, NC	28309
0407-40-0572	ZP #15 LLC	PO BOX 2628	WILMINGTON, NC	28402
0407-40-0739	TIME WARNER ENTERTAINMENT	PO BOX 6659	ENGLEWOOD, CO	80155
0407-40-1480	SAMPSON, CRAIG	910 BINGHAM DR	FAYETTEVILLE, NC	28304
0407-40-2143	CHABOT, LOUISE W	1002 BINGHAM DR	FAYETTEVILLE, NC	28304
0407-40-2209	DALLAS, FRED PAULDEE AND WIFE	916 BINGHAM DR	FAYETTEVILLE, NC	28304
0407-40-2953	CLODFELTER, SWANE D	2320 WILLOUHGBY DR	FAYETTEVILLE, NC	28301
0407-40-4188	STEWART, JOHN AND EDNA	1003 BINGHAM DR	FAYETTEVILLE, NC	28304
0407-40-4432	PAPPAS, MARIA G	304 OWEN DR	FAYETTEVILLE, NC	28304
0407-40-4614	WORSLEY COMPANIES, INC	PO BOX 3227	WILMINGTON, NC	27712
0407-40-5462	ANDERSON, ROGER M. AND WIFT	1005 ARBERDALE DR	FAYETTEVILLE, NC	28304
0407-40-6232	McKEE, JOHN KENNETH AND WIFT	1002 ARBERDALE DR	FAYETTEVILLE, NC	28304
0407-40-6510	JOHNSON, MARY A	6206 E DARROW DR	FAYETTEVILLE, NC	28304
0407-40-6596	HOLTHE, INGELORE	6204 DARROW DR	FAYETTEVILLE, NC	28304
0407-40-6732	DOWNING, TILDONW AND ROBERT E	PO BOX 53387	FAYETTEVILLE, NC	28303
0407-40-7796	GIRDWOOD, RICHARD	3301 JURA DR	FAYETTEVILLE, NC	28303
0407-40-8312	FLOYD, STEVE	5416 RAEFORD ROAD	FAYETTEVILLE, NC	28304
0407-40-8651	DOWNING, HENRY L AND WIFT	6202 E. DARROW DR	FAYETTEVILLE, NC	28304
0407-40-9328	BASCOMBE, DAVID D	6203 E. DARROW DR	FAYETTEVILLE, NC	28304
0407-40-9544	McDANIEL, WM E AND WIFT	6201 DARROW DR	FAYETTEVILLE, NC	28304
0407-41-0490	GILLIS, M D	49444 RIVER RUN ROAD	ALBEMARLE, NC	28001
0407-41-5748	TOLLISON, SARA WILLIAMS	3018 LAKE FOREST DRIVE	GREENSBORO, NC	27408
0407-41-5748	TOLLISON, SARA WILLIAMS	3018 LAKE FOREST DRIVE	GREENSBORO	27408
0407-42-0121	WORTHY, CURTIS & WIFE JANICE	6320 LYNETTE CIR	FAYETTEVILLE, NC	28314
0407-42-1184	VEREEN, DIXIE L.	6104 KIMBROOK DR	FAYETTEVILLE, NC	28314
0407-51-3660	TIME WARNER ENTERTAINMENT	PO BOX 6659	ENGLEWOOD, CO	80155

FAYETTEVILLE QUADRANGLE
NORTH CAROLINA
7.5 MINUTE TOPOGRAPHIC SERIES

Delta Environmental Consultants, Inc.
3205 Randall Parkway Suite 104
Wilmington, North Carolina 28403

PROJECT NO. X0NC-057	CLIENT/LOCATION WORSLEY COMPANIES, INC. SCOTCHMAN #38 FAYETTEVILLE, NORTH CAROLINA
PROJECT MANAGER B. Lievre	FIGURE NO. 1
DATE 11/21/02	DRAWING DESCRIPTION SITE VICINITY MAP



Delta Environmental Consultants, Inc.

Delta Environmental Consultants, Inc.
3205 Randall Parkway Suite 104
Wilmington, North Carolina 28403

PROJECT NO. X0NC-057	CLIENT/LOCATION	WORSLEY COMPANIES, INC. SCOTCHMAN #38 FAYETTEVILLE, NORTH CAROLINA
PROJECT MANAGER B.LIEVRE	FIGURE NO. 2	DRAWING DESCRIPTION SITE MAP
DATE 11/21/02		

WELL CONSTRUCTION RECORD

North Carolina – Department of Environmental and Natural Resources – Division of Water Quality – Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) MARK GETTYS CERTIFICATION # 2345

WELL CONTRACTOR COMPANY NAME GEOLOGIC EXPLORATION, INC. PHONE # (704) 872-7686

STATE WELL CONSTRUCTION PERMIT# (if applicable) _____ ASSOCIATED WQ PERMIT# (if applicable) _____

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐
Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, list Use _____

2. WELL LOCATION:
Nearest Town: FAYETTEVILLE County CUMBERLAND
6261 RAEFORD RD. (SM #38)
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐ Ridge ☐ Slope ☐ Valley ☒ Flat
(check appropriate box)
Latitude/longitude of well location
_____
(degrees/minutes/seconds)
Latitude/longitude source: ☐ GPS ☐ Topographic map
(check box)

3. OWNER: WORSLEY OIL CO.
Address P.O. BOX 3227
(Street or Route No.)
WILMINGTON NC 28406
City or Town State Zip Code
( )
Area Code – Phone Number

4. DATE DRILLED 2-5-03
5. TOTAL DEPTH: 55.0 FEET
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 46.0 FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 0.0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): N/A METHOD OF TEST N/A
10. WATER ZONES (depth): N/A
11. DISINFECTION: Type N/A Amount _____

DEPTH From	DEPTH To	DRILLING LOG Formation Description
0.0	5.0	BROWN SAND
5.0	35.0	ORANGE/BROWN CLAYEY SAND
35.0	55.0	ORANGE/TAN SAND

12. CASING:

	Depth From	To	Ft	Diameter	Wall Thickness or Weight/Ft.	Material
	0.0	35.0	Ft	2 INCH	SCH 40	PVC
			Ft.			
			Ft.			

13. Grout:

	Depth From	To	Ft.	Material	Method
	0.0	31.0	Ft.	Portland Bentonite	Slurry
			Ft.		

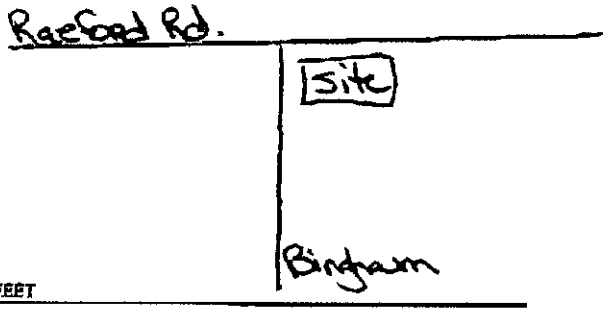
14. SCREEN:

	Depth From	To	Ft.	Diameter	in.	Slot Size	in	Material
	35.0	55.0	Ft.	2.0	in.	.010	in	PVC
			Ft.		in.		in	

15. SAND/GRAVEL PACK:

	Depth From	To	Ft.	Size	Material
	33.0	55.0	Ft.	20-40	FINE SILICA SAND
			Ft.		

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads, inculed the road numbers and common road names.



16. REMARKS: MW-1 BENTONITE SEAL FROM 31.0 TO 33.0 FEET

I DO HEARBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

mark K. Getty 2-11-03
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center – Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

GW-1 REV. 07/2001

WELL CONSTRUCTION RECORD

North Carolina – Department of Environmental and Natural Resources – Division of Water Quality – Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) MARK GETTYS CERTIFICATION # 2345

WELL CONTRACTOR COMPANY NAME GEOLOGIC EXPLORATION, INC. PHONE # (704) 872-7686

STATE WELL CONSTRUCTION PERMIT# (if applicable) _____ ASSOCIATED WQ PERMIT# (if applicable) _____

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐
Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, list Use _____

2. WELL LOCATION:
Nearest Town: FAYETTEVILLE County CUMBERLAND
6261 RAEFORD RD. (SM #38)
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐ Ridge ☐ Slope ☐ Valley ☒ Flat
(check appropriate box)
Latitude/longitude of well location _____
(degrees/minutes/seconds)
Latitude/longitude source: ☐ GPS ☐ Topographic map
(check box)

3. OWNER: WORSLEY OIL CO.
Address P.O. BOX 3227
(Street or Route No.)
WILMINGTON NC 28406
City or Town State Zip Code
( ) _____
Area Code – Phone Number

4. DATE DRILLED 2-5-03
5. TOTAL DEPTH: 55.0 FEET
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 46.0 FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 0.0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): N/A METHOD OF TEST N/A
10. WATER ZONES (depth): N/A
11. DISINFECTION: Type N/A Amount _____
12. CASING:

	Depth			Diameter	Wall Thickness or Weight/Ft.	Material
From	0.0	To 35.0	Ft	2 INCH	SCH 40	PVC
From		To	Ft.			
From		To	Ft.			

13. Grout:

	Depth			Material	Method
From	0.0	To 31.0	Ft.	Portland Bentonite	Slurry
From		To	Ft.		

14. SCREEN:

	Depth			Diameter		Slot Size		Material
From	35.0	To 55.0	Ft.	2.0	in.	.010	in	PVC
From		To	Ft.		in.		in	

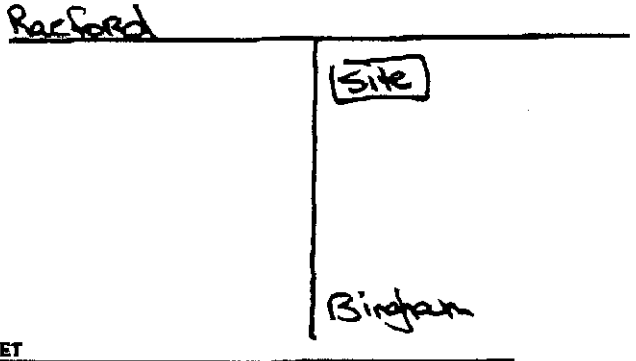
15. SAND/GRAVEL PACK:

	Depth			Size	Material
From	33.0	To 55.0	Ft.	20-40	FINE SILICA SAND
From		To	Ft.		

16. REMARKS: MW-2 BENTONITE SEAL FROM 31.0 TO 33.0 FEET

DEPTH From	DEPTH To	DRILLING LOG Formation Description
0.0	10.0	RED CLAY
10.0	35.0	RED/ORANGE SANDY CLAY
35.0	55.0	RED/BROWN/ORANGE CLAYEY SAND

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads, inculed the road numbers and common road names.



I DO HEARBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Mark K. Gettys 2-11-03
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center – Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

GW-1 REV. 07/2001

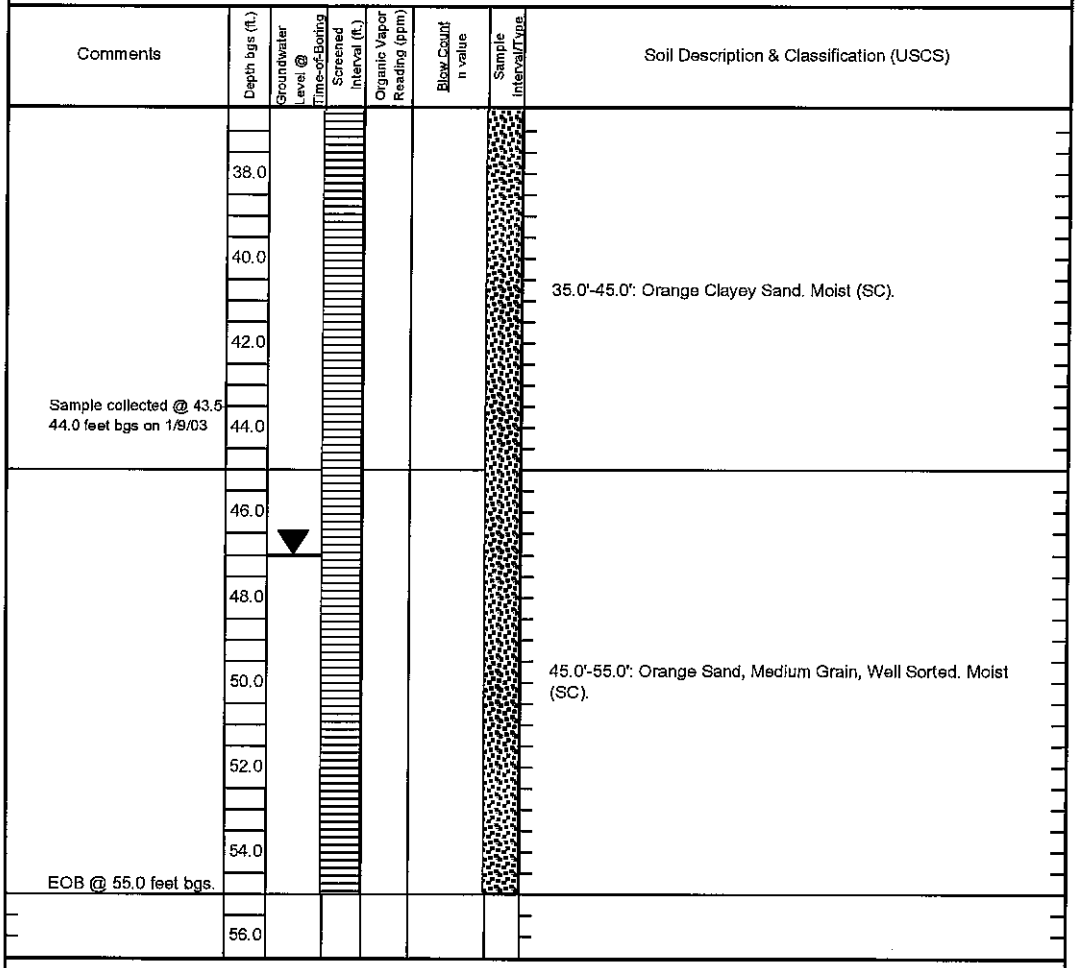
Boring Log

Site Name:	Scotchman #38	Soil Boring ID:	MW-1
Location:	6261 Raeford Road	Construction Date:	02/05/03
	Fayetteville, Cumberland County	Drilling Contractor:	Geologic Exploration
	North Carolina	Drill Rig Type:	Diedrich D-120
Project No.:	X0NC-057	Drilling Method:	Hollow-stem auger (0.0' - 12.0')
Client:	Worsley Companies, Inc.		
	10 Cardinal Drive	Logged By:	NH
	Wilmington, North Carolina	Top-of-Casing Elev.:	NA

Comments	Depth bgs (ft.)	Groundwater Level @ Time-of-Boring	Screened Interval (ft.)	Organic Vapor Reading (ppm)	Blow Count n value	Sample Interval/Type	Soil Description & Classification (USCS)
							0.0-2.0': Concrete/Orange Clay Sand Fill (SC)
	2.0						
Sample collected @ 2.5-3.0 feet bgs on 1/9/03	4.0						
	6.0						2.0'-10.0': Brown Clayey Sand. (SC)
Sample collected @ 8.0-8.5 feet bgs on 1/9/03	8.0						
	10.0						
	12.0						
Sample collected @ 13.0-13.5 feet bgs on 1/9/03	14.0						10.0'-18.0': Orange Clayey Sand. Moist (SC).
	16.0						
Sample collected @ 17.0-17.5 feet bgs on 1/9/03	18.0						
	20.0						
	22.0						
	24.0						
Sample collected @ 25.0-25.5 feet bgs on 1/9/03	26.0						18.0'-35.0': Orange Sand, Medium Grain, Well Sorted. Dry (SW).
	28.0						
	30.0						
	32.0						
	34.0						
Sample collected @ 35.0-35.5 feet bgs on 1/9/03	36.0						35.0'-45.0': Orange Clayey Sand. Moist (SC).

Boring Log

Site Name:	Scotchman #38	Soil Boring ID:	MW-1
Location:	6261 Raeford Road	Construction Date:	02/05/03
	Fayetteville, Cumberland County	Drilling Contractor:	Geologic Exploration
	North Carolina	Drill Rig Type:	Diedrich D-120
Project No.:	X0NC-057	Drilling Method:	Hollow-stem auger (0.0' - 12.0')
Client:	Worsley Companies, Inc.		
	10 Cardinal Drive	Logged By:	NH
	Wilmington, North Carolina	Top-of-Casing Elev.:	NA



Symbols

- Groundwater Level @ Time-of-Boring
- Screened Interval
- Hand Auger
- Direct Push
- Std. Penetration Test (SPT)
- Cuttings
- Submitted for laboratory analysis

Notes:
Organic Vapor Readings by a PID - photoionization detector
bgs - below ground surface
ppm - parts per million
EOB - end of boring

Delta Environmental Consultants, Inc.
3205 Randall Parkway Suite 104
Wilmington, North Carolina 28403

Boring Log

Site Name:	Scotchman #38	Soil Boring ID:	MW-2
Location:	6261 Raeford Road	Construction Date:	02/05/03
	Fayetteville, Cumberland County	Drilling Contractor:	Geologic Exploration
	North Carolina	Drill Rig Type:	Diedrich D-120
Project No.:	X0NC-057	Drilling Method:	Hollow-stem auger (0.0' - 12.0')
Client:	Worsley Companies, Inc.		
	10 Cardinal Drive	Logged By:	NH
	Wilmington, North Carolina	Top-of-Casing Elev.:	NA

Comments	Depth bgs (ft.)	Groundwater Level @ Time-of-Boring	Screened Interval (ft.)	Organic Vapor Reading (ppm)	Blow Count n value	Sample Interval/Type	Soil Description & Classification (USCS)
							0.0-1.0': Asphalt/Fill
	2.0						
	4.0						
	6.0						
	8.0						1.0'-18.0': Red Clayey Sand, Tight. Slight Hydrocarbon Odor (SC)
	10.0						
Sample collected @ 11.5-12.0 feet bgs on 1/9/03	12.0						
	14.0						
Sample collected @ 14.5-15.0 feet bgs on 1/9/03	16.0						
	18.0						
	20.0						
Sample collected @ 21.0-21.5 feet bgs on 1/9/03	22.0						
	24.0						
	26.0						18.0'-40.0': Tan/Orange Sand, Medium Grain, Well Sorted. Dry (SW).
Sample collected @ 27.0-27.5 feet bgs on 1/9/03	28.0						
	30.0						
	32.0						
	34.0						

Boring Log

Site Name:	Scotchman #38	Soil Boring ID:	MW-2
Location:	6261 Raeford Road	Construction Date:	02/05/03
	Fayetteville, Cumberland County	Drilling Contractor:	Geologic Exploration
	North Carolina	Drill Rig Type:	Diedrich D-120
Project No.:	X0NC-057	Drilling Method:	Hollow-stem auger (0.0' - 12.0')
Client:	Worsley Companies, Inc.		
	10 Cardinal Drive	Logged By:	NH
	Wilmington, North Carolina	Top-of-Casing Elev.:	NA

Comments	Depth bgs (ft.)	Groundwater Level @ Time-of-Boring	Screened Interval (ft.)	Organic Vapor Reading (ppm)	Blow Count n value	Sample Interval/Type	Soil Description & Classification (USCS)
	36.0						
Sample collected @ 38.0-38.5 feet bgs on 1/9/03	38.0	▼					18.0'-40.0': Tan/Orange Sand, Medium Grain, Well Sorted. Dry (SW).
	40.0						
	42.0						
	44.0						40.0'-50.0': Orange Clayey Sand, Moist (SC).
	46.0						
	48.0						
	50.0						
	52.0						50.0-55.0': Orange Sand (SP).
EOB @ 55.0 feet bgs.	54.0						
	56.0						

Symbols

▼ - Groundwater Level @ Time-of-Boring

▨ - Hand Auger

▥ - Direct Push

▭ - Screened Interval

■ - Std. Penetration Test (SPT)

▩ - Cuttings

▒ - Submitted for laboratory analysis

Notes:
Organic Vapor Readings by a PID - photoionization detector
bgs - below ground surface
ppm - parts per million
EOB - end of boring

Delta Environmental Consultants, Inc.
3205 Randall Parkway Suite 104
Wilmington, North Carolina 28403

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-1 (2.5-3.0)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60504
Lab Project ID: G129-672
Matrix: Soil %Solids: 88.0

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	57	BQL
Acrolein	110	BQL
Acrylonitrile	110	BQL
Benzene	5.7	20
Bromobenzene	5.7	BQL
Bromochloromethane	5.7	BQL
Bromodichloromethane	5.7	BQL
Bromoform	5.7	BQL
Bromomethane	5.7	BQL
2-Butanone	28	BQL
n-Butylbenzene	5.7	BQL
sec-Butylbenzene	5.7	BQL
tert-Butylbenzene	5.7	BQL
Carbon disulfide	5.7	BQL
Carbon tetrachloride	5.7	BQL
Chlorobenzene	5.7	BQL
Chloroethane	5.7	BQL
Chloroform	5.7	BQL
Chloromethane	5.7	BQL
2-Chlorotoluene	5.7	BQL
4-Chlorotoluene	5.7	BQL
Dibromochloromethane	5.7	BQL
1,2-Dibromo-3-chloropropane	5.7	BQL
Dibromomethane	5.7	BQL
1,2-Dibromoethane (EDB)	5.7	BQL
1,2-Dichlorobenzene	5.7	BQL
1,3-Dichlorobenzene	5.7	BQL
1,4-Dichlorobenzene	5.7	BQL
trans-1,4-Dichloro-2-butene	5.7	BQL
1,1-Dichloroethane	5.7	BQL
1,1-Dichloroethene	5.7	BQL
1,2-Dichloroethane	5.7	BQL
cis-1,2-Dichloroethene	5.7	BQL
trans-1,2-dichloroethene	5.7	BQL
1,2-Dichloropropane	5.7	BQL
1,3-Dichloropropane	5.7	BQL
2,2-Dichloropropane	5.7	BQL
1,1-Dichloropropene	5.7	BQL
cis-1,3-Dichloropropene	5.7	BQL
trans-1,3-Dichloropropene	5.7	BQL
Dichlorodifluoromethane	5.7	BQL
Diisopropyl ether (DIPE)	5.7	BQL
Ethylbenzene	5.7	16
Hexachlorobutadiene	5.7	BQL
2-Hexanone	5.7	BQL

Reviewed by: MVC

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-1 (2.5-3.0)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60504
Lab Project ID: G129-672
Matrix: Soil %Solids: 88.0

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	5.7	BQL
Isopropylbenzene	5.7	BQL
4-Isopropyltoluene	5.7	BQL
Methylene chloride	23	BQL
4-Methyl-2-pentanone	5.7	BQL
Methyl-tert-butyl ether (MTBE)	5.7	16
Naphthalene	5.7	BQL
n-Propyl benzene	5.7	BQL
Styrene	5.7	BQL
1,1,1,2-Tetrachloroethane	5.7	BQL
1,1,2,2-Tetrachloroethane	5.7	BQL
Tetrachloroethene	5.7	BQL
Toluene	5.7	12
1,2,3-Trichlorobenzene	5.7	BQL
1,2,4-Trichlorobenzene	5.7	BQL
Trichloroethene	5.7	BQL
1,1,1-Trichloroethane	5.7	BQL
1,1,2-Trichloroethane	5.7	BQL
Trichlorofluoromethane	5.7	BQL
1,2,3-Trichloropropane	5.7	BQL
1,2,4-Trimethylbenzene	5.7	24
1,3,5-Trimethylbenzene	5.7	15
Vinyl chloride	5.7	BQL
m-,p-Xylene	11	44
o-Xylene	5.7	8.5

Surrogate Spike Recoveries Compound	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Bromofluorobenzene	50	49.9	100
1,2-Dichloroethane-d4	50	49.4	99
Toluene-d8	50	49.9	100

Comments:

All results are corrected for dilution.

Reviewed by: MAC

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-1 (8.0-8.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60505
Lab Project ID: G129-672
Matrix: Soil %Solids: 85.5

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	58	BQL
Acrolein	120	BQL
Acrylonitrile	120	BQL
Benzene	5.8	BQL
Bromobenzene	5.8	BQL
Bromochloromethane	5.8	BQL
Bromodichloromethane	5.8	BQL
Bromoform	5.8	BQL
Bromomethane	5.8	BQL
2-Butanone	29	BQL
n-Butylbenzene	5.8	BQL
sec-Butylbenzene	5.8	BQL
tert-Butylbenzene	5.8	BQL
Carbon disulfide	5.8	BQL
Carbon tetrachloride	5.8	BQL
Chlorobenzene	5.8	BQL
Chloroethane	5.8	BQL
Chloroform	5.8	BQL
Chloromethane	5.8	BQL
2-Chlorotoluene	5.8	BQL
4-Chlorotoluene	5.8	BQL
Dibromochloromethane	5.8	BQL
1,2-Dibromo-3-chloropropane	5.8	BQL
Dibromomethane	5.8	BQL
1,2-Dibromoethane (EDB)	5.8	BQL
1,2-Dichlorobenzene	5.8	BQL
1,3-Dichlorobenzene	5.8	BQL
1,4-Dichlorobenzene	5.8	BQL
trans-1,4-Dichloro-2-butene	5.8	BQL
1,1-Dichloroethane	5.8	BQL
1,1-Dichloroethene	5.8	BQL
1,2-Dichloroethane	5.8	BQL
cis-1,2-Dichloroethene	5.8	BQL
trans-1,2-dichloroethene	5.8	BQL
1,2-Dichloropropane	5.8	BQL
1,3-Dichloropropane	5.8	BQL
2,2-Dichloropropane	5.8	BQL
1,1-Dichloropropene	5.8	BQL
cis-1,3-Dichloropropene	5.8	BQL
trans-1,3-Dichloropropene	5.8	BQL
Dichlorodifluoromethane	5.8	BQL
Diisopropyl ether (DIPE)	5.8	BQL
Ethylbenzene	5.8	BQL
Hexachlorobutadiene	5.8	BQL
2-Hexanone	5.8	BQL

Flags: BQL = Below Quantitation Limit

Reviewed by: MAL

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles
by GCMS 8260B/5035

Client Sample ID: MW-1 (8.0-8.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60505
Lab Project ID: G129-672
Matrix: Soil %Solids: 85.5

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	5.8	BQL
Isopropylbenzene	5.8	BQL
4-Isopropyltoluene	5.8	BQL
Methylene chloride	23	BQL
4-Methyl-2-pentanone	5.8	BQL
Methyl-tert-butyl ether (MTBE)	5.8	BQL
Naphthalene	5.8	BQL
n-Propyl benzene	5.8	BQL
Styrene	5.8	BQL
1,1,1,2-Tetrachloroethane	5.8	BQL
1,1,2,2-Tetrachloroethane	5.8	BQL
Tetrachloroethene	5.8	BQL
Toluene	5.8	BQL
1,2,3-Trichlorobenzene	5.8	BQL
1,2,4-Trichlorobenzene	5.8	BQL
Trichloroethene	5.8	BQL
1,1,1-Trichloroethane	5.8	BQL
1,1,2-Trichloroethane	5.8	BQL
Trichlorofluoromethane	5.8	BQL
1,2,3-Trichloropropane	5.8	BQL
1,2,4-Trimethylbenzene	5.8	BQL
1,3,5-Trimethylbenzene	5.8	BQL
Vinyl chloride	5.8	BQL
m-,p-Xylene	12	BQL
o-Xylene	5.8	BQL

Surrogate Spike Recoveries Compound	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Bromofluorobenzene	50	48.7	97
1,2-Dichloroethane-d4	50	50.1	100
Toluene-d8	50	50.2	100

Comments:
All results are corrected for dilution.

Reviewed by: MRC

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-1 (13-13.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60506
Lab Project ID: G129-672
Matrix: Soil %Solids: 90.7

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	55	BQL
Acrolein	110	BQL
Acrylonitrile	110	BQL
Benzene	5.5	BQL
Bromobenzene	5.5	BQL
Bromochloromethane	5.5	BQL
Bromodichloromethane	5.5	BQL
Bromoform	5.5	BQL
Bromomethane	5.5	BQL
2-Butanone	28	BQL
n-Butylbenzene	5.5	BQL
sec-Butylbenzene	5.5	BQL
tert-Butylbenzene	5.5	BQL
Carbon disulfide	5.5	BQL
Carbon tetrachloride	5.5	BQL
Chlorobenzene	5.5	BQL
Chloroethane	5.5	BQL
Chloroform	5.5	BQL
Chloromethane	5.5	BQL
2-Chlorotoluene	5.5	BQL
4-Chlorotoluene	5.5	BQL
Dibromochloromethane	5.5	BQL
1,2-Dibromo-3-chloropropane	5.5	BQL
Dibromomethane	5.5	BQL
1,2-Dibromoethane (EDB)	5.5	BQL
1,2-Dichlorobenzene	5.5	BQL
1,3-Dichlorobenzene	5.5	BQL
1,4-Dichlorobenzene	5.5	BQL
trans-1,4-Dichloro-2-butene	5.5	BQL
1,1-Dichloroethane	5.5	BQL
1,1-Dichloroethene	5.5	BQL
1,2-Dichloroethane	5.5	BQL
cis-1,2-Dichloroethene	5.5	BQL
trans-1,2-dichloroethene	5.5	BQL
1,2-Dichloropropane	5.5	BQL
1,3-Dichloropropane	5.5	BQL
2,2-Dichloropropane	5.5	BQL
1,1-Dichloropropene	5.5	BQL
cis-1,3-Dichloropropene	5.5	BQL
trans-1,3-Dichloropropene	5.5	BQL
Dichlorodifluoromethane	5.5	BQL
Diisopropyl ether (DIPE)	5.5	BQL
Ethylbenzene	5.5	BQL
Hexachlorobutadiene	5.5	BQL
2-Hexanone	5.5	BQL

Flags: BQL = Below Quantitation Limit

Reviewed by: MdC

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-1 (13-13.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60506
Lab Project ID: G129-672
Matrix: Soil %Solids: 90.7

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	5.5	BQL
Isopropylbenzene	5.5	BQL
4-Isopropyltoluene	5.5	BQL
Methylene chloride	22	BQL
4-Methyl-2-pentanone	5.5	BQL
Methyl-tert-butyl ether (MTBE)	5.5	BQL
Naphthalene	5.5	BQL
n-Propyl benzene	5.5	BQL
Styrene	5.5	BQL
1,1,1,2-Tetrachloroethane	5.5	BQL
1,1,2,2-Tetrachloroethane	5.5	BQL
Tetrachloroethene	5.5	BQL
Toluene	5.5	BQL
1,2,3-Trichlorobenzene	5.5	BQL
1,2,4-Trichlorobenzene	5.5	BQL
Trichloroethene	5.5	BQL
1,1,1-Trichloroethane	5.5	BQL
1,1,2-Trichloroethane	5.5	BQL
Trichlorofluoromethane	5.5	BQL
1,2,3-Trichloropropane	5.5	BQL
1,2,4-Trimethylbenzene	5.5	BQL
1,3,5-Trimethylbenzene	5.5	BQL
Vinyl chloride	5.5	BQL
m-,p-Xylene	11	BQL
o-Xylene	5.5	BQL

Surrogate Spike Recoveries Compound	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Bromofluorobenzene	50	48.9	98
1,2-Dichloroethane-d4	50	51.2	102
Toluene-d8	50	49.7	99

Comments:

All results are corrected for dilution.

Reviewed by: MRC

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-1 (17-17.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60507
Lab Project ID: G129-672
Matrix: Soil %Solids: 95.5

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	52	BQL
Acrolein	100	BQL
Acrylonitrile	100	BQL
Benzene	5.2	BQL
Bromobenzene	5.2	BQL
Bromochloromethane	5.2	BQL
Bromodichloromethane	5.2	BQL
Bromoform	5.2	BQL
Bromomethane	5.2	BQL
2-Butanone	26	BQL
n-Butylbenzene	5.2	BQL
sec-Butylbenzene	5.2	BQL
tert-Butylbenzene	5.2	BQL
Carbon disulfide	5.2	BQL
Carbon tetrachloride	5.2	BQL
Chlorobenzene	5.2	BQL
Chloroethane	5.2	BQL
Chloroform	5.2	BQL
Chloromethane	5.2	BQL
2-Chlorotoluene	5.2	BQL
4-Chlorotoluene	5.2	BQL
Dibromochloromethane	5.2	BQL
1,2-Dibromo-3-chloropropane	5.2	BQL
Dibromomethane	5.2	BQL
1,2-Dibromoethane (EDB)	5.2	BQL
1,2-Dichlorobenzene	5.2	BQL
1,3-Dichlorobenzene	5.2	BQL
1,4-Dichlorobenzene	5.2	BQL
trans-1,4-Dichloro-2-butene	5.2	BQL
1,1-Dichloroethane	5.2	BQL
1,1-Dichloroethene	5.2	BQL
1,2-Dichloroethane	5.2	BQL
cis-1,2-Dichloroethene	5.2	BQL
trans-1,2-dichloroethene	5.2	BQL
1,2-Dichloropropane	5.2	BQL
1,3-Dichloropropane	5.2	BQL
2,2-Dichloropropane	5.2	BQL
1,1-Dichloropropene	5.2	BQL
cis-1,3-Dichloropropene	5.2	BQL
trans-1,3-Dichloropropene	5.2	BQL
Dichlorodifluoromethane	5.2	BQL
Diisopropyl ether (DIPE)	5.2	BQL
Ethylbenzene	5.2	BQL
Hexachlorobutadiene	5.2	BQL
2-Hexanone	5.2	BQL

Reviewed by: MLC

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-1 (17-17.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60507
Lab Project ID: G129-672
Matrix: Soil %Solids: 95.5

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	5.2	BQL
Isopropylbenzene	5.2	BQL
4-Isopropyltoluene	5.2	BQL
Methylene chloride	21	BQL
4-Methyl-2-pentanone	5.2	BQL
Methyl-tert-butyl ether (MTBE)	5.2	BQL
Naphthalene	5.2	BQL
n-Propyl benzene	5.2	BQL
Styrene	5.2	BQL
1,1,1,2-Tetrachloroethane	5.2	BQL
1,1,2,2-Tetrachloroethane	5.2	BQL
Tetrachloroethene	5.2	BQL
Toluene	5.2	BQL
1,2,3-Trichlorobenzene	5.2	BQL
1,2,4-Trichlorobenzene	5.2	BQL
Trichloroethene	5.2	BQL
1,1,1-Trichloroethane	5.2	BQL
1,1,2-Trichloroethane	5.2	BQL
Trichlorofluoromethane	5.2	BQL
1,2,3-Trichloropropane	5.2	BQL
1,2,4-Trimethylbenzene	5.2	BQL
1,3,5-Trimethylbenzene	5.2	BQL
Vinyl chloride	5.2	BQL
m-,p-Xylene	10	BQL
o-Xylene	5.2	BQL

Surrogate Spike Recoveries Compound	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Bromofluorobenzene	50	49.1	98
1,2-Dichloroethane-d4	50	49.8	100
Toluene-d8	50	49.5	99

Comments:

All results are corrected for dilution.

Reviewed by: MWC

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-1 (25-25.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60508
Lab Project ID: G129-672
Matrix: Soil %Solids: 88.8

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	56	BQL
Acrolein	110	BQL
Acrylonitrile	110	BQL
Benzene	5.6	BQL
Bromobenzene	5.6	BQL
Bromochloromethane	5.6	BQL
Bromodichloromethane	5.6	BQL
Bromoform	5.6	BQL
Bromomethane	5.6	BQL
2-Butanone	28	BQL
n-Butylbenzene	5.6	BQL
sec-Butylbenzene	5.6	BQL
tert-Butylbenzene	5.6	BQL
Carbon disulfide	5.6	BQL
Carbon tetrachloride	5.6	BQL
Chlorobenzene	5.6	BQL
Chloroethane	5.6	BQL
Chloroform	5.6	BQL
Chloromethane	5.6	BQL
2-Chlorotoluene	5.6	BQL
4-Chlorotoluene	5.6	BQL
Dibromochloromethane	5.6	BQL
1,2-Dibromo-3-chloropropane	5.6	BQL
Dibromomethane	5.6	BQL
1,2-Dibromoethane (EDB)	5.6	BQL
1,2-Dichlorobenzene	5.6	BQL
1,3-Dichlorobenzene	5.6	BQL
1,4-Dichlorobenzene	5.6	BQL
trans-1,4-Dichloro-2-butene	5.6	BQL
1,1-Dichloroethane	5.6	BQL
1,1-Dichloroethene	5.6	BQL
1,2-Dichloroethane	5.6	BQL
cis-1,2-Dichloroethene	5.6	BQL
trans-1,2-dichloroethene	5.6	BQL
1,2-Dichloropropane	5.6	BQL
1,3-Dichloropropane	5.6	BQL
2,2-Dichloropropane	5.6	BQL
1,1-Dichloropropene	5.6	BQL
cis-1,3-Dichloropropene	5.6	BQL
trans-1,3-Dichloropropene	5.6	BQL
Dichlorodifluoromethane	5.6	BQL
Diisopropyl ether (DIPE)	5.6	BQL
Ethylbenzene	5.6	BQL
Hexachlorobutadiene	5.6	BQL
2-Hexanone	5.6	BQL

Reviewed by: MLC

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-1 (25-25.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60508
Lab Project ID: G129-672
Matrix: Soil %Solids: 88.8

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	5.6	BQL
Isopropylbenzene	5.6	BQL
4-Isopropyltoluene	5.6	BQL
Methylene chloride	23	BQL
4-Methyl-2-pentanone	5.6	BQL
Methyl-tert-butyl ether (MTBE)	5.6	BQL
Naphthalene	5.6	BQL
n-Propyl benzene	5.6	BQL
Styrene	5.6	BQL
1,1,1,2-Tetrachloroethane	5.6	BQL
1,1,2,2-Tetrachloroethane	5.6	BQL
Tetrachloroethene	5.6	BQL
Toluene	5.6	BQL
1,2,3-Trichlorobenzene	5.6	BQL
1,2,4-Trichlorobenzene	5.6	BQL
Trichloroethene	5.6	BQL
1,1,1-Trichloroethane	5.6	BQL
1,1,2-Trichloroethane	5.6	BQL
Trichlorofluoromethane	5.6	BQL
1,2,3-Trichloropropane	5.6	BQL
1,2,4-Trimethylbenzene	5.6	BQL
1,3,5-Trimethylbenzene	5.6	BQL
Vinyl chloride	5.6	BQL
m-,p-Xylene	11	BQL
o-Xylene	5.6	BQL

Surrogate Spike Recoveries Compound	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Bromofluorobenzene	50	49.7	99
1,2-Dichloroethane-d4	50	49.2	98
Toluene-d8	50	49.6	99

Comments:

All results are corrected for dilution.

Reviewed by: JWC

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-1 (35-35.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60509
Lab Project ID: G129-672
Matrix: Soil %Solids: 89.4

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	56	BQL
Acrolein	110	BQL
Acrylonitrile	110	BQL
Benzene	5.6	BQL
Bromobenzene	5.6	BQL
Bromochloromethane	5.6	BQL
Bromodichloromethane	5.6	BQL
Bromoform	5.6	BQL
Bromomethane	5.6	BQL
2-Butanone	28	BQL
n-Butylbenzene	5.6	BQL
sec-Butylbenzene	5.6	BQL
tert-Butylbenzene	5.6	BQL
Carbon disulfide	5.6	BQL
Carbon tetrachloride	5.6	BQL
Chlorobenzene	5.6	BQL
Chloroethane	5.6	BQL
Chloroform	5.6	BQL
Chloromethane	5.6	BQL
2-Chlorotoluene	5.6	BQL
4-Chlorotoluene	5.6	BQL
Dibromochloromethane	5.6	BQL
1,2-Dibromo-3-chloropropane	5.6	BQL
Dibromomethane	5.6	BQL
1,2-Dibromoethane (EDB)	5.6	BQL
1,2-Dichlorobenzene	5.6	BQL
1,3-Dichlorobenzene	5.6	BQL
1,4-Dichlorobenzene	5.6	BQL
trans-1,4-Dichloro-2-butene	5.6	BQL
1,1-Dichloroethane	5.6	BQL
1,1-Dichloroethene	5.6	BQL
1,2-Dichloroethane	5.6	BQL
cis-1,2-Dichloroethene	5.6	BQL
trans-1,2-dichloroethene	5.6	BQL
1,2-Dichloropropane	5.6	BQL
1,3-Dichloropropane	5.6	BQL
2,2-Dichloropropane	5.6	BQL
1,1-Dichloropropene	5.6	BQL
cis-1,3-Dichloropropene	5.6	BQL
trans-1,3-Dichloropropene	5.6	BQL
Dichlorodifluoromethane	5.6	BQL
Diisopropyl ether (DIPE)	5.6	BQL
Ethylbenzene	5.6	BQL
Hexachlorobutadiene	5.6	BQL
2-Hexanone	5.6	BQL

Reviewed by: MLC

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-1 (35-35.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60509
Lab Project ID: G129-672
Matrix: Soil %Solids: 89.4

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	5.6	BQL
Isopropylbenzene	5.6	BQL
4-Isopropyltoluene	5.6	BQL
Methylene chloride	22	BQL
4-Methyl-2-pentanone	5.6	BQL
Methyl-tert-butyl ether (MTBE)	5.6	BQL
Naphthalene	5.6	BQL
n-Propyl benzene	5.6	BQL
Styrene	5.6	BQL
1,1,1,2-Tetrachloroethane	5.6	BQL
1,1,2,2-Tetrachloroethane	5.6	BQL
Tetrachloroethene	5.6	BQL
Toluene	5.6	BQL
1,2,3-Trichlorobenzene	5.6	BQL
1,2,4-Trichlorobenzene	5.6	BQL
Trichloroethene	5.6	BQL
1,1,1-Trichloroethane	5.6	BQL
1,1,2-Trichloroethane	5.6	BQL
Trichlorofluoromethane	5.6	BQL
1,2,3-Trichloropropane	5.6	BQL
1,2,4-Trimethylbenzene	5.6	BQL
1,3,5-Trimethylbenzene	5.6	BQL
Vinyl chloride	5.6	BQL
m-,p-Xylene	11	BQL
o-Xylene	5.6	BQL

Surrogate Spike Recoveries Compound	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Bromofluorobenzene	50	49.4	99
1,2-Dichloroethane-d4	50	50.4	101
Toluene-d8	50	50.4	101

Comments:

All results are corrected for dilution.

Reviewed by: MAC

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-1 (43.5-44)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60510
Lab Project ID: G129-672
Matrix: Soil %Solids: 91.4

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	55	BQL
Acrolein	110	BQL
Acrylonitrile	110	BQL
Benzene	5.5	BQL
Bromobenzene	5.5	BQL
Bromochloromethane	5.5	BQL
Bromodichloromethane	5.5	BQL
Bromoform	5.5	BQL
Bromomethane	5.5	BQL
2-Butanone	27	BQL
n-Butylbenzene	5.5	BQL
sec-Butylbenzene	5.5	BQL
tert-Butylbenzene	5.5	BQL
Carbon disulfide	5.5	BQL
Carbon tetrachloride	5.5	BQL
Chlorobenzene	5.5	BQL
Chloroethane	5.5	BQL
Chloroform	5.5	BQL
Chloromethane	5.5	BQL
2-Chlorotoluene	5.5	BQL
4-Chlorotoluene	5.5	BQL
Dibromochloromethane	5.5	BQL
1,2-Dibromo-3-chloropropane	5.5	BQL
Dibromomethane	5.5	BQL
1,2-Dibromoethane (EDB)	5.5	BQL
1,2-Dichlorobenzene	5.5	BQL
1,3-Dichlorobenzene	5.5	BQL
1,4-Dichlorobenzene	5.5	BQL
trans-1,4-Dichloro-2-butene	5.5	BQL
1,1-Dichloroethane	5.5	BQL
1,1-Dichloroethene	5.5	BQL
1,2-Dichloroethane	5.5	BQL
cis-1,2-Dichloroethene	5.5	BQL
trans-1,2-dichloroethene	5.5	BQL
1,2-Dichloropropane	5.5	BQL
1,3-Dichloropropane	5.5	BQL
2,2-Dichloropropane	5.5	BQL
1,1-Dichloropropene	5.5	BQL
cis-1,3-Dichloropropene	5.5	BQL
trans-1,3-Dichloropropene	5.5	BQL
Dichlorodifluoromethane	5.5	BQL
Diisopropyl ether (DIPE)	5.5	BQL
Ethylbenzene	5.5	BQL
Hexachlorobutadiene	5.5	BQL
2-Hexanone	5.5	BQL

Reviewed by: MRC

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-1 (43.5-44)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60510
Lab Project ID: G129-672
Matrix: Soil %Solids: 91.4

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	5.5	BQL
Isopropylbenzene	5.5	BQL
4-Isopropyltoluene	5.5	BQL
Methylene chloride	22	BQL
4-Methyl-2-pentanone	5.5	BQL
Methyl-tert-butyl ether (MTBE)	5.5	BQL
Naphthalene	5.5	BQL
n-Propyl benzene	5.5	BQL
Styrene	5.5	BQL
1,1,1,2-Tetrachloroethane	5.5	BQL
1,1,2,2-Tetrachloroethane	5.5	BQL
Tetrachloroethene	5.5	BQL
Toluene	5.5	BQL
1,2,3-Trichlorobenzene	5.5	BQL
1,2,4-Trichlorobenzene	5.5	BQL
Trichloroethene	5.5	BQL
1,1,1-Trichloroethane	5.5	BQL
1,1,2-Trichloroethane	5.5	BQL
Trichlorofluoromethane	5.5	BQL
1,2,3-Trichloropropane	5.5	BQL
1,2,4-Trimethylbenzene	5.5	BQL
1,3,5-Trimethylbenzene	5.5	BQL
Vinyl chloride	5.5	BQL
m-,p-Xylene	11	BQL
o-Xylene	5.5	BQL

Surrogate Spike Recoveries Compound	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Bromofluorobenzene	50	47.8	96
1,2-Dichloroethane-d4	50	51.5	103
Toluene-d8	50	50.4	101

Comments:

All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-2 (11.5-12.0)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60511
Lab Project ID: G129-672
Matrix: Soil %Solids: 88.5

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	57	BQL
Acrolein	110	BQL
Acrylonitrile	110	BQL
Benzene	5.7	BQL
Bromobenzene	5.7	BQL
Bromochloromethane	5.7	BQL
Bromodichloromethane	5.7	BQL
Bromoform	5.7	BQL
Bromomethane	5.7	BQL
2-Butanone	28	BQL
n-Butylbenzene	5.7	BQL
sec-Butylbenzene	5.7	BQL
tert-Butylbenzene	5.7	BQL
Carbon disulfide	5.7	BQL
Carbon tetrachloride	5.7	BQL
Chlorobenzene	5.7	BQL
Chloroethane	5.7	BQL
Chloroform	5.7	BQL
Chloromethane	5.7	BQL
2-Chlorotoluene	5.7	BQL
4-Chlorotoluene	5.7	BQL
Dibromochloromethane	5.7	BQL
1,2-Dibromo-3-chloropropane	5.7	BQL
Dibromomethane	5.7	BQL
1,2-Dibromoethane (EDB)	5.7	BQL
1,2-Dichlorobenzene	5.7	BQL
1,3-Dichlorobenzene	5.7	BQL
1,4-Dichlorobenzene	5.7	BQL
trans-1,4-Dichloro-2-butene	5.7	BQL
1,1-Dichloroethane	5.7	BQL
1,1-Dichloroethene	5.7	BQL
1,2-Dichloroethane	5.7	BQL
cis-1,2-Dichloroethene	5.7	BQL
trans-1,2-dichloroethene	5.7	BQL
1,2-Dichloropropane	5.7	BQL
1,3-Dichloropropane	5.7	BQL
2,2-Dichloropropane	5.7	BQL
1,1-Dichloropropene	5.7	BQL
cis-1,3-Dichloropropene	5.7	BQL
trans-1,3-Dichloropropene	5.7	BQL
Dichlorodifluoromethane	5.7	BQL
Diisopropyl ether (DIPE)	5.7	BQL
Ethylbenzene	5.7	BQL
Hexachlorobutadiene	5.7	BQL
2-Hexanone	5.7	BQL

Reviewed by:

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-2 (11.5-12.0)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60511
Lab Project ID: G129-672
Matrix: Soil %Solids: 88.5

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	5.7	BQL
Isopropylbenzene	5.7	BQL
4-Isopropyltoluene	5.7	BQL
Methylene chloride	23	BQL
4-Methyl-2-pentanone	5.7	BQL
Methyl-tert-butyl ether (MTBE)	5.7	BQL
Naphthalene	5.7	BQL
n-Propyl benzene	5.7	BQL
Styrene	5.7	BQL
1,1,1,2-Tetrachloroethane	5.7	BQL
1,1,2,2-Tetrachloroethane	5.7	BQL
Tetrachloroethene	5.7	BQL
Toluene	5.7	BQL
1,2,3-Trichlorobenzene	5.7	BQL
1,2,4-Trichlorobenzene	5.7	BQL
Trichloroethene	5.7	BQL
1,1,1-Trichloroethane	5.7	BQL
1,1,2-Trichloroethane	5.7	BQL
Trichlorofluoromethane	5.7	BQL
1,2,3-Trichloropropane	5.7	BQL
1,2,4-Trimethylbenzene	5.7	BQL
1,3,5-Trimethylbenzene	5.7	BQL
Vinyl chloride	5.7	BQL
m-,p-Xylene	11	BQL
o-Xylene	5.7	BQL

Surrogate Spike Recoveries Compound	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Bromofluorobenzene	50	49.1	98
1,2-Dichloroethane-d4	50	49.3	99
Toluene-d8	50	49.6	99

Comments:

All results are corrected for dilution.

Reviewed by: MK

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-2 (14.5-15.0)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60512
Lab Project ID: G129-672
Matrix: Soil %Solids: 94.4

Date Analyzed: 1/22/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	53	BQL
Acrolein	110	BQL
Acrylonitrile	110	BQL
Benzene	5.3	BQL
Bromobenzene	5.3	BQL
Bromochloromethane	5.3	BQL
Bromodichloromethane	5.3	BQL
Bromoform	5.3	BQL
Bromomethane	5.3	BQL
2-Butanone	26	BQL
n-Butylbenzene	5.3	BQL
sec-Butylbenzene	5.3	BQL
tert-Butylbenzene	5.3	BQL
Carbon disulfide	5.3	BQL
Carbon tetrachloride	5.3	BQL
Chlorobenzene	5.3	BQL
Chloroethane	5.3	BQL
Chloroform	5.3	BQL
Chloromethane	5.3	BQL
2-Chlorotoluene	5.3	BQL
4-Chlorotoluene	5.3	BQL
Dibromochloromethane	5.3	BQL
1,2-Dibromo-3-chloropropane	5.3	BQL
Dibromomethane	5.3	BQL
1,2-Dibromoethane (EDB)	5.3	BQL
1,2-Dichlorobenzene	5.3	BQL
1,3-Dichlorobenzene	5.3	BQL
1,4-Dichlorobenzene	5.3	BQL
trans-1,4-Dichloro-2-butene	5.3	BQL
1,1-Dichloroethane	5.3	BQL
1,1-Dichloroethene	5.3	BQL
1,2-Dichloroethane	5.3	BQL
cis-1,2-Dichloroethene	5.3	BQL
trans-1,2-dichloroethene	5.3	BQL
1,2-Dichloropropane	5.3	BQL
1,3-Dichloropropane	5.3	BQL
2,2-Dichloropropane	5.3	BQL
1,1-Dichloropropene	5.3	BQL
cis-1,3-Dichloropropene	5.3	BQL
trans-1,3-Dichloropropene	5.3	BQL
Dichlorodifluoromethane	5.3	BQL
Diisopropyl ether (DIPE)	5.3	BQL
Ethylbenzene	5.3	BQL
Hexachlorobutadiene	5.3	BQL
2-Hexanone	5.3	BQL

Reviewed by: MRC

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles
by GCMS 8260B/5035

Client Sample ID: MW-2 (14.5-15.0)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60512
Lab Project ID: G129-672
Matrix: Soil %Solids: 94.4

Date Analyzed: 1/22/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	5.3	BQL
Isopropylbenzene	5.3	BQL
4-Isopropyltoluene	5.3	BQL
Methylene chloride	21	BQL
4-Methyl-2-pentanone	5.3	BQL
Methyl-tert-butyl ether (MTBE)	5.3	BQL
Naphthalene	5.3	BQL
n-Propyl benzene	5.3	BQL
Styrene	5.3	BQL
1,1,1,2-Tetrachloroethane	5.3	BQL
1,1,2,2-Tetrachloroethane	5.3	BQL
Tetrachloroethene	5.3	BQL
Toluene	5.3	BQL
1,2,3-Trichlorobenzene	5.3	BQL
1,2,4-Trichlorobenzene	5.3	BQL
Trichloroethene	5.3	BQL
1,1,1-Trichloroethane	5.3	BQL
1,1,2-Trichloroethane	5.3	BQL
Trichlorofluoromethane	5.3	BQL
1,2,3-Trichloropropane	5.3	BQL
1,2,4-Trimethylbenzene	5.3	BQL
1,3,5-Trimethylbenzene	5.3	BQL
Vinyl chloride	5.3	BQL
m-,p-Xylene	11	BQL
o-Xylene	5.3	BQL

Surrogate Spike Recoveries Compound	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Bromofluorobenzene	50	50.4	101
1,2-Dichloroethane-d4	50	51.4	103
Toluene-d8	50	50.2	100

Comments:
All results are corrected for dilution.

Reviewed by: MLC

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-2 (21.0-21.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60513
Lab Project ID: G129-672
Matrix: Soil %Solids: 88.8

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	56	BQL
Acrolein	110	BQL
Acrylonitrile	110	BQL
Benzene	5.6	BQL
Bromobenzene	5.6	BQL
Bromochloromethane	5.6	BQL
Bromodichloromethane	5.6	BQL
Bromoform	5.6	BQL
Bromomethane	5.6	BQL
2-Butanone	28	BQL
n-Butylbenzene	5.6	BQL
sec-Butylbenzene	5.6	BQL
tert-Butylbenzene	5.6	BQL
Carbon disulfide	5.6	BQL
Carbon tetrachloride	5.6	BQL
Chlorobenzene	5.6	BQL
Chloroethane	5.6	BQL
Chloroform	5.6	BQL
Chloromethane	5.6	BQL
2-Chlorotoluene	5.6	BQL
4-Chlorotoluene	5.6	BQL
Dibromochloromethane	5.6	BQL
1,2-Dibromo-3-chloropropane	5.6	BQL
Dibromomethane	5.6	BQL
1,2-Dibromoethane (EDB)	5.6	BQL
1,2-Dichlorobenzene	5.6	BQL
1,3-Dichlorobenzene	5.6	BQL
1,4-Dichlorobenzene	5.6	BQL
trans-1,4-Dichloro-2-butene	5.6	BQL
1,1-Dichloroethane	5.6	BQL
1,1-Dichloroethene	5.6	BQL
1,2-Dichloroethane	5.6	BQL
cis-1,2-Dichloroethene	5.6	BQL
trans-1,2-dichloroethene	5.6	BQL
1,2-Dichloropropane	5.6	BQL
1,3-Dichloropropane	5.6	BQL
2,2-Dichloropropane	5.6	BQL
1,1-Dichloropropene	5.6	BQL
cis-1,3-Dichloropropene	5.6	BQL
trans-1,3-Dichloropropene	5.6	BQL
Dichlorodifluoromethane	5.6	BQL
Diisopropyl ether (DIPE)	5.6	BQL
Ethylbenzene	5.6	BQL
Hexachlorobutadiene	5.6	BQL
2-Hexanone	5.6	BQL

Reviewed by: MLC

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-2 (21.0-21.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60513
Lab Project ID: G129-672
Matrix: Soil %Solids: 88.8

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	5.6	BQL
Isopropylbenzene	5.6	BQL
4-Isopropyltoluene	5.6	BQL
Methylene chloride	23	BQL
4-Methyl-2-pentanone	5.6	BQL
Methyl-tert-butyl ether (MTBE)	5.6	BQL
Naphthalene	5.6	BQL
n-Propyl benzene	5.6	BQL
Styrene	5.6	BQL
1,1,1,2-Tetrachloroethane	5.6	BQL
1,1,2,2-Tetrachloroethane	5.6	BQL
Tetrachloroethene	5.6	BQL
Toluene	5.6	BQL
1,2,3-Trichlorobenzene	5.6	BQL
1,2,4-Trichlorobenzene	5.6	BQL
Trichloroethene	5.6	BQL
1,1,1-Trichloroethane	5.6	BQL
1,1,2-Trichloroethane	5.6	BQL
Trichlorofluoromethane	5.6	BQL
1,2,3-Trichloropropane	5.6	BQL
1,2,4-Trimethylbenzene	5.6	BQL
1,3,5-Trimethylbenzene	5.6	BQL
Vinyl chloride	5.6	BQL
m-,p-Xylene	11	BQL
o-Xylene	5.6	BQL

Surrogate Spike Recoveries Compound	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Bromofluorobenzene	50	49.7	99
1,2-Dichloroethane-d4	50	50.9	102
Toluene-d8	50	49.9	100

Comments:

All results are corrected for dilution.

Reviewed by: MRC

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-2 (27-27.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60514
Lab Project ID: G129-672
Matrix: Soil %Solids: 88.4

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	57	BQL
Acrolein	110	BQL
Acrylonitrile	110	BQL
Benzene	5.7	BQL
Bromobenzene	5.7	BQL
Bromochloromethane	5.7	BQL
Bromodichloromethane	5.7	BQL
Bromoform	5.7	BQL
Bromomethane	5.7	BQL
2-Butanone	28	BQL
n-Butylbenzene	5.7	BQL
sec-Butylbenzene	5.7	BQL
tert-Butylbenzene	5.7	BQL
Carbon disulfide	5.7	BQL
Carbon tetrachloride	5.7	BQL
Chlorobenzene	5.7	BQL
Chloroethane	5.7	BQL
Chloroform	5.7	BQL
Chloromethane	5.7	BQL
2-Chlorotoluene	5.7	BQL
4-Chlorotoluene	5.7	BQL
Dibromochloromethane	5.7	BQL
1,2-Dibromo-3-chloropropane	5.7	BQL
Dibromomethane	5.7	BQL
1,2-Dibromoethane (EDB)	5.7	BQL
1,2-Dichlorobenzene	5.7	BQL
1,3-Dichlorobenzene	5.7	BQL
1,4-Dichlorobenzene	5.7	BQL
trans-1,4-Dichloro-2-butene	5.7	BQL
1,1-Dichloroethane	5.7	BQL
1,1-Dichloroethene	5.7	BQL
1,2-Dichloroethane	5.7	BQL
cis-1,2-Dichloroethene	5.7	BQL
trans-1,2-dichloroethene	5.7	BQL
1,2-Dichloropropane	5.7	BQL
1,3-Dichloropropane	5.7	BQL
2,2-Dichloropropane	5.7	BQL
1,1-Dichloropropene	5.7	BQL
cis-1,3-Dichloropropene	5.7	BQL
trans-1,3-Dichloropropene	5.7	BQL
Dichlorodifluoromethane	5.7	BQL
Diisopropyl ether (DIPE)	5.7	BQL
Ethylbenzene	5.7	BQL
Hexachlorobutadiene	5.7	BQL
2-Hexanone	5.7	BQL

Revlewed by: MR

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-2 (27-27.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60514
Lab Project ID: G129-672
Matrix: Soil %Solids: 88.4

Date Analyzed: 1/21/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	5.7	BQL
Isopropylbenzene	5.7	BQL
4-Isopropyltoluene	5.7	BQL
Methylene chloride	23	BQL
4-Methyl-2-pentanone	5.7	BQL
Methyl-tert-butyl ether (MTBE)	5.7	BQL
Naphthalene	5.7	BQL
n-Propyl benzene	5.7	BQL
Styrene	5.7	BQL
1,1,1,2-Tetrachloroethane	5.7	BQL
1,1,2,2-Tetrachloroethane	5.7	BQL
Tetrachloroethene	5.7	BQL
Toluene	5.7	BQL
1,2,3-Trichlorobenzene	5.7	BQL
1,2,4-Trichlorobenzene	5.7	BQL
Trichloroethene	5.7	BQL
1,1,1-Trichloroethane	5.7	BQL
1,1,2-Trichloroethane	5.7	BQL
Trichlorofluoromethane	5.7	BQL
1,2,3-Trichloropropane	5.7	BQL
1,2,4-Trimethylbenzene	5.7	BQL
1,3,5-Trimethylbenzene	5.7	BQL
Vinyl chloride	5.7	BQL
m-,p-Xylene	11	BQL
o-Xylene	5.7	BQL

Surrogate Spike Recoveries Compound	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Bromofluorobenzene	50	49.9	100
1,2-Dichloroethane-d4	50	50.0	100
Toluene-d8	50	49.9	100

Comments:

All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-2 (38-38.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60515
Lab Project ID: G129-672
Matrix: Soil %Solids: 90.6

Date Analyzed: 1/22/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	55	BQL
Acrolein	110	BQL
Acrylonitrile	110	BQL
Benzene	5.5	BQL
Bromobenzene	5.5	BQL
Bromochloromethane	5.5	BQL
Bromodichloromethane	5.5	BQL
Bromoform	5.5	BQL
Bromomethane	5.5	BQL
2-Butanone	28	BQL
n-Butylbenzene	5.5	BQL
sec-Butylbenzene	5.5	BQL
tert-Butylbenzene	5.5	BQL
Carbon disulfide	5.5	BQL
Carbon tetrachloride	5.5	BQL
Chlorobenzene	5.5	BQL
Chloroethane	5.5	BQL
Chloroform	5.5	BQL
Chloromethane	5.5	BQL
2-Chlorotoluene	5.5	BQL
4-Chlorotoluene	5.5	BQL
Dibromochloromethane	5.5	BQL
1,2-Dibromo-3-chloropropane	5.5	BQL
Dibromomethane	5.5	BQL
1,2-Dibromoethane (EDB)	5.5	BQL
1,2-Dichlorobenzene	5.5	BQL
1,3-Dichlorobenzene	5.5	BQL
1,4-Dichlorobenzene	5.5	BQL
trans-1,4-Dichloro-2-butene	5.5	BQL
1,1-Dichloroethane	5.5	BQL
1,1-Dichloroethene	5.5	BQL
1,2-Dichloroethane	5.5	BQL
cis-1,2-Dichloroethene	5.5	BQL
trans-1,2-dichloroethene	5.5	BQL
1,2-Dichloropropane	5.5	BQL
1,3-Dichloropropane	5.5	BQL
2,2-Dichloropropane	5.5	BQL
1,1-Dichloropropene	5.5	BQL
cis-1,3-Dichloropropene	5.5	BQL
trans-1,3-Dichloropropene	5.5	BQL
Dichlorodifluoromethane	5.5	BQL
Diisopropyl ether (DIPE)	5.5	BQL
Ethylbenzene	5.5	BQL
Hexachlorobutadiene	5.5	BQL
2-Hexanone	5.5	BQL

Reviewed by: MAC

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: MW-2 (38-38.5)
Client Project ID: Scotchman #38 (SM #38)
Lab Sample ID: 60515
Lab Project ID: G129-672
Matrix: Soil %Solids: 90.6

Date Analyzed: 1/22/03
Analyzed By: RNP
Date Collected: 1/9/03
Date Received: 1/10/03
Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	5.5	BQL
Isopropylbenzene	5.5	BQL
4-Isopropyltoluene	5.5	BQL
Methylene chloride	22	BQL
4-Methyl-2-pentanone	5.5	BQL
Methyl-tert-butyl ether (MTBE)	5.5	BQL
Naphthalene	5.5	BQL
n-Propyl benzene	5.5	BQL
Styrene	5.5	BQL
1,1,1,2-Tetrachloroethane	5.5	BQL
1,1,2,2-Tetrachloroethane	5.5	BQL
Tetrachloroethene	5.5	BQL
Toluene	5.5	BQL
1,2,3-Trichlorobenzene	5.5	BQL
1,2,4-Trichlorobenzene	5.5	BQL
Trichloroethene	5.5	BQL
1,1,1-Trichloroethane	5.5	BQL
1,1,2-Trichloroethane	5.5	BQL
Trichlorofluoromethane	5.5	BQL
1,2,3-Trichloropropane	5.5	BQL
1,2,4-Trimethylbenzene	5.5	BQL
1,3,5-Trimethylbenzene	5.5	BQL
Vinyl chloride	5.5	BQL
m-,p-Xylene	11	BQL
o-Xylene	5.5	BQL

Surrogate Spike Recoveries Compound	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Bromofluorobenzene	50	48.9	98
1,2-Dichloroethane-d4	50	49.2	98
Toluene-d8	50	49.8	100

Comments:

All results are corrected for dilution.

Reviewed by: MC

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Delta Environmental Consultants

Project Name: Scotchman #38 (SM #38)

Sample Information and Analytical Results	
Sample Identification	MW-1 (2.5-3.0)
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	01/09/03
Date Received	01/10/03
Date Extracted	01/09/03
Date Analyzed	01/15/03
Dry Weight	88
Dilution Factor	1
C_5-C_8 Aliphatics**	< 10 (mg/Kg)
C_9-C_{12} Aliphatics**	< 10 (mg/Kg)
C_9-C_{10} Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	79
Surrogate % Recovery - FID	98

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G129-672-60504

Reviewed By: MRL

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Delta Environmental Consultants

Project Name: Scotchman #38 (SM #38)

Sample Information and Analytical Results	
Sample Identification	MW-1 (8.0-8.5)
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	01/09/03
Date Received	01/10/03
Date Extracted	01/09/03
Date Analyzed	01/15/03
Dry Weight	86
Dilution Factor	1
C_5-C_8 Aliphatics**	< 10 (mg/Kg)
C_9-C_{12} Aliphatics**	< 10 (mg/Kg)
C_9-C_{10} Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	80
Surrogate % Recovery - FID	88

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G129-672-60505

Reviewed By: mrl

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Delta Environmental Consultants

Project Name: Scotchman #38 (SM #38)

Sample Information and Analytical Results	
Sample Identification	MW-1 (13-13.5)
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	01/09/03
Date Received	01/10/03
Date Extracted	01/09/03
Date Analyzed	01/15/03
Dry Weight	91
Dilution Factor	1
C_5-C_8 Aliphatics**	< 10 (mg/Kg)
C_9-C_{12} Aliphatics**	< 10 (mg/Kg)
C_9-C_{10} Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	87
Surrogate % Recovery - FID	96

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G129-672-60506

Reviewed By: MRC

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Delta Environmental Consultants

Project Name: Scotchman #38 (SM #38)

Sample Information and Analytical Results	
Sample Identification	MW-1 (17-17.5)
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	01/09/03
Date Received	01/10/03
Date Extracted	01/09/03
Date Analyzed	01/15/03
Dry Weight	96
Dilution Factor	1
C_5-C_8 Aliphatics**	< 10 (mg/Kg)
C_9-C_{12} Aliphatics**	< 10 (mg/Kg)
C_9-C_{10} Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	85
Surrogate % Recovery - FID	96

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G129-672-60507

Reviewed By: MLC

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Delta Environmental Consultants

Project Name: Scotchman #38 (SM #38)

Sample Information and Analytical Results	
Sample Identification	MW-1 (25-25.5)
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	01/09/03
Date Received	01/10/03
Date Extracted	01/09/03
Date Analyzed	01/15/03
Dry Weight	89
Dilution Factor	1
C_5-C_8 Aliphatics**	< 10 (mg/Kg)
C_9-C_{12} Aliphatics**	< 10 (mg/Kg)
C_9-C_{10} Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	87
Surrogate % Recovery - FID	94

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G129-672-60508

Reviewed By: MC

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Delta Environmental Consultants

Project Name: Scotchman #38 (SM #38)

Sample Information and Analytical Results	
Sample Identification	MW-1 (35-35.5)
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	01/09/03
Date Received	01/10/03
Date Extracted	01/09/03
Date Analyzed	01/15/03
Dry Weight	89
Dilution Factor	1
C_5-C_8 Aliphatics**	< 10 (mg/Kg)
C_9-C_{12} Aliphatics**	< 10 (mg/Kg)
C_9-C_{10} Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	87
Surrogate % Recovery - FID	94

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G129-672-60509

Reviewed By: MLC

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Delta Environmental Consultants

Project Name: Scotchman #38 (SM #38)

Sample Information and Analytical Results	
Sample Identification	MW-1 (43.5-44)
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	01/09/03
Date Received	01/10/03
Date Extracted	01/09/03
Date Analyzed	01/15/03
Dry Weight	91
Dilution Factor	1
C_5-C_8 Aliphatics**	< 10 (mg/Kg)
C_9-C_{12} Aliphatics**	< 10 (mg/Kg)
C_9-C_{10} Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	85
Surrogate % Recovery - FID	93

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G129-672-60510

Reviewed By: MRC

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Delta Environmental Consultants

Project Name: Scotchman #38 (SM #38)

Sample Information and Analytical Results	
Sample Identification	MW-2 (11.5-12.0)
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	01/09/03
Date Received	01/10/03
Date Extracted	01/09/03
Date Analyzed	01/15/03
Dry Weight	88
Dilution Factor	1
C_5-C_8 Aliphatics**	< 10 (mg/Kg)
C_9-C_{12} Aliphatics**	< 10 (mg/Kg)
C_9-C_{10} Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	85
Surrogate % Recovery - FID	92

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or Internal standards.

Lab Info: G129-672-60511

Reviewed By: MLC

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Delta Environmental Consultants

Project Name: Scotchman #38 (SM #38)

Sample Information and Analytical Results	
Sample Identification	MW-2 (14.5-15.0)
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	01/09/03
Date Received	01/10/03
Date Extracted	01/09/03
Date Analyzed	01/15/03
Dry Weight	94
Dilution Factor	1
C_5-C_8 Aliphatics**	< 10 (mg/Kg)
C_9-C_{12} Aliphatics**	< 10 (mg/Kg)
C_9-C_{10} Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	84
Surrogate % Recovery - FID	91

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G129-672-60512

Reviewed By: MLC

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Delta Environmental Consultants

Project Name: Scotchman #38 (SM #38)

Sample Information and Analytical Results	
Sample Identification	MW-2 (21.0-21.5)
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	01/09/03
Date Received	01/10/03
Date Extracted	01/09/03
Date Analyzed	01/15/03
Dry Weight	89
Dilution Factor	1
C_5-C_8 Aliphatics**	< 10 (mg/Kg)
C_9-C_{12} Aliphatics**	< 10 (mg/Kg)
C_9-C_{10} Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	84
Surrogate % Recovery - FID	90

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G129-672-60513

Reviewed By: mlc

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Delta Environmental Consultants

Project Name: Scotchman #38 (SM #38)

Sample Information and Analytical Results	
Sample Identification	MW-2 (27-27.5)
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	01/09/03
Date Received	01/10/03
Date Extracted	01/09/03
Date Analyzed	01/15/03
Dry Weight	88
Dilution Factor	1
C_5-C_8 Aliphatics**	< 10 (mg/Kg)
C_9-C_{12} Aliphatics**	< 10 (mg/Kg)
C_9-C_{10} Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	87
Surrogate % Recovery - FID	93

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G129-672-60514

Reviewed By: MAC

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Delta Environmental Consultants

Project Name: Scotchman #38 (SM #38)

Sample Information and Analytical Results	
Sample Identification	MW-2 (38-38.5)
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	01/09/03
Date Received	01/10/03
Date Extracted	01/09/03
Date Analyzed	01/15/03
Dry Weight	91
Dilution Factor	1
C_5-C_8 Aliphatics**	< 10 (mg/Kg)
C_9-C_{12} Aliphatics**	< 10 (mg/Kg)
C_9-C_{10} Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	87
Surrogate % Recovery - FID	93

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G129-672-60515

Reviewed By: MLC

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 12/26/02 PID Initial Calibration Date: 12/26/02

Calibration Ranges and Limits

Range	MDL (µg/L)	MDL (mg/Kg)	ML (µg/L)	ML (mg/Kg)	RL (µg/L)	RL (mg/Kg)
C_5-C_8 Aliphatics	9.3	0.41	29.4	1.3	100	10
C_9-C_{12} Aliphatics	7.9	0.3	25.2	0.97	100	10
C_9-C_{10} Aromatics	0.5	0.04	1.5	0.14	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD or CCC	Method of Quantitation
C_5-C_8 Aliphatics	20	2	4.0	Calibration Factor
	80	8		
	200	20		
	800	80		
	2000	200		
C_9-C_{12} Aliphatics	15	1.5	12.3	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C_9-C_{10} Aromatics	32.5	3.25	11.3	Calibration Factor
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date: 01/14/03

Calibration Check

Range	Levels (µg/L)	Levels (mg/Kg)	RPD
C_5-C_8 Aliphatics	200	20	23.5
C_9-C_{12} Aliphatics	150	15	16.1
C_9-C_{10} Aromatics	325	32.5	8.9

MDL = Method Detection Limit
ML = Minimum Limit
RL = Reportable Limit
RPD = Relative Percent Difference
%RSD = Percent Relative Standard Deviation
CCC = Correlation Coefficient of Curve

Reviewed By: MRC

PARADIGM ANALYTICAL LABORATORIES, INC.

Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 12/26/02 PID Initial Calibration Date: 12/26/02

Calibration Ranges and Limits

Range	MDL (µg/L)	MDL (mg/Kg)	ML (µg/L)	ML (mg/Kg)	RL (µg/L)	RL (mg/Kg)
C_5-C_8 Aliphatics	9.3	0.41	29.4	1.3	100	10
C_9-C_{12} Aliphatics	7.9	0.3	25.2	0.97	100	10
C_9-C_{10} Aromatics	0.5	0.04	1.5	0.14	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD or CCC	Method of Quantitation
C_5-C_8 Aliphatics	20	2	4.0	Calibration Factor
	80	8		
	200	20		
	800	80		
	2000	200		
C_9-C_{12} Aliphatics	15	1.5	12.3	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C_9-C_{10} Aromatics	32.5	3.25	11.3	Calibration Factor
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date: 01/15/03

Calibration Check

Range	Levels (µg/L)	Levels (mg/Kg)	RPD
C_5-C_8 Aliphatics	200	20	9.3
C_9-C_{12} Aliphatics	150	15	16.1
C_9-C_{10} Aromatics	325	32.5	2.3

MDL = Method Detection Limit
ML = Minimum Limit
RL = Reportable Limit

RPD = Relative Percent Difference
%RSD = Percent Relative Standard Deviation
CCC = Correlation Coefficient of Curve

Reviewed By: MLC

PARADIGM ANALYTICAL LABORATORIES, INC.
2627 Northchase Parkway SE, Wilmington, NC 28405
Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 36326

Page 1 of 2

Client: Delta
Address:
Address:
Quote #:

Project ID: Scotchman #38 (SM #38)
Contact: B. Lieure
Phone:
Fax:

Date: 1-9-03
Turnaround: Standard
Job Number: XONC-057
P.O. Number:

Report To: Delta
Invoice To:

Sample ID	Date	Time	Matrix	Preservatives	Analyses: 8260	VPH	% Solids	Comments: Please specify any special reporting requirements
								G129-672
MW-1 (2.5-3.0)	1-9-03	0916	Soil		4	1	1	
MW-1 (8.0-8.5)		0923			4	1	1	
MW-1 (13-13.5)		0930			4	1	1	
MW-1 (17-17.5)		0940			4	1	1	
MW-1 (25-25.5)		0950			4	1	1	
MW-1 (35-35.5)		1033			4	1	1	
MW-1 (43.5-44)		1107			4	1	1	
MW-2 (11.5-12)		1200			4	1	1	
MW-2 (14.5-15.0)		1210			4	1	1	
MW-2 (21.0-21.5)		1220			4	1	1	

Relinquished By	Date	Time	Received By	Date	Time	Temperature	State Certification Requested
Peter M Fahey	1-10-03	0817	Patricia Rogers	1/10/03	8:20	9.6, 5.6 corr	NC ✓ SC ____ Other ____

SEE REVERSE FOR TERMS AND CONDITIONS

ORIGINAL

PARADIGM ANALYTICAL LABORATORIES, INC.
2627 Northchase Parkway SE, Wilmington, NC 28405
Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# [illegible]

Client: Delta
Address:
Address:
Quote #:

Project ID: SCOtchman #38
Contact:
Phone:
Fax:

Date: 1-9-03
Turnaround: Standard
Job Number: XONC 057
P.O. Number:

Report To: Delta

Invoice To:

Sample ID	Date	Time	Matrix	Preservatives				Analyses: 8260	VPH	% solids								Comments: Please specify any special reporting requirements
																		G129-672
MW-2 (27-27.5)	1-9-03	1225	Soil					4	1	1								
MW-2 (38-38.5)	1-9-03	1245	Soil					4	1	1								

Relinquished By	Date	Time	Received By	Date	Time	Temperature
Peter M Fahey	1-10-03	087	[signature]	1/10/03	8:20 on ice	4.6, 5.6

State Certification Requested
NC ✓ SC ___ Other ___

SEE REVERSE FOR TERMS AND CONDITIONS

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles
by GC 601

Client Sample ID: MW-1
Client Project ID: Scotchman #38
Lab Sample ID: 63066
Lab Project ID: G129-688

Analyzed By: JTF
Date Collected: 2/10/03
Date Received: 2/11/03
Matrix: Water

Analyte	Result ug/L	Report Limit ug/L	Dilution Factor	Date Analyzed
Bromodichloromethane	BQL	1.0	1	2/13/03
Bromoform	BQL	2.0	1	2/13/03
Bromomethane	BQL	1.0	1	2/13/03
Carbon tetrachloride	BQL	1.0	1	2/13/03
Chlorobenzene	BQL	1.0	1	2/13/03
Chloroethane	BQL	1.0	1	2/13/03
Chloroform	BQL	1.0	1	2/13/03
Chloromethane	BQL	1.0	1	2/13/03
Dibromochloromethane	BQL	1.0	1	2/13/03
1,2-Dibromoethane (EDB)	BQL	1.0	1	2/13/03
1,2-Dichlorobenzene	BQL	1.0	1	2/13/03
1,3-Dichlorobenzene	BQL	1.0	1	2/13/03
1,4-Dichlorobenzene	BQL	1.0	1	2/13/03
1,1-Dichloroethane	BQL	1.0	1	2/13/03
1,2-Dichloroethane	BQL	1.0	1	2/13/03
1,1-Dichloroethene	BQL	1.0	1	2/13/03
cis-1,2-Dichloroethene	BQL	1.0	1	2/13/03
trans-1,2-Dichloroethene	BQL	1.0	1	2/13/03
1,2-Dichloropropane	BQL	1.0	1	2/13/03
cis-1,3-Dichloropropene	BQL	1.0	1	2/13/03
trans-1,3-Dichloropropene	BQL	1.0	1	2/13/03
Methylene Chloride	BQL	5.0	1	2/13/03
1,1,2,2-Tetrachloroethane	BQL	1.0	1	2/13/03
Tetrachloroethene	BQL	1.0	1	2/13/03
1,1,1-Trichloroethane	BQL	1.0	1	2/13/03
1,1,2-Trichloroethane	BQL	1.0	1	2/13/03
Trichloroethene	BQL	1.0	1	2/13/03
Trichlorofluoromethane	BQL	1.0	1	2/13/03
Vinyl Chloride	BQL	1.0	1	2/13/03

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
1,4-Dichlorobutane	40	40.2	100

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles
by GC 601

Client Sample ID: MW-2
Client Project ID: Scotchman #38
Lab Sample ID: 63067
Lab Project ID: G129-688

Analyzed By: JTF
Date Collected: 2/10/03
Date Received: 2/11/03
Matrix: Water

Analyte	Result ug/L	Report Limit ug/L	Dilution Factor	Date Analyzed
Bromodichloromethane	BQL	1.0	1	2/12/03
Bromoform	BQL	2.0	1	2/12/03
Bromomethane	BQL	1.0	1	2/12/03
Carbon tetrachloride	BQL	1.0	1	2/12/03
Chlorobenzene	BQL	1.0	1	2/12/03
Chloroethane	BQL	1.0	1	2/12/03
Chloroform	BQL	1.0	1	2/12/03
Chloromethane	BQL	1.0	1	2/12/03
Dibromochloromethane	BQL	1.0	1	2/12/03
1,2-Dibromoethane (EDB)	BQL	1.0	1	2/12/03
1,2-Dichlorobenzene	BQL	1.0	1	2/12/03
1,3-Dichlorobenzene	BQL	1.0	1	2/12/03
1,4-Dichlorobenzene	BQL	1.0	1	2/12/03
1,1-Dichloroethane	BQL	1.0	1	2/12/03
1,2-Dichloroethane	BQL	1.0	1	2/12/03
1,1-Dichloroethene	BQL	1.0	1	2/12/03
cis-1,2-Dichloroethene	BQL	1.0	1	2/12/03
trans-1,2-Dichloroethene	BQL	1.0	1	2/12/03
1,2-Dichloropropane	BQL	1.0	1	2/12/03
cis-1,3-Dichloropropene	BQL	1.0	1	2/12/03
trans-1,3-Dichloropropene	BQL	1.0	1	2/12/03
Methylene Chloride	BQL	5.0	1	2/12/03
1,1,2,2-Tetrachloroethane	BQL	1.0	1	2/12/03
Tetrachloroethene	BQL	1.0	1	2/12/03
1,1,1-Trichloroethane	BQL	1.0	1	2/12/03
1,1,2-Trichloroethane	BQL	1.0	1	2/12/03
Trichloroethene	BQL	1.0	1	2/12/03
Trichlorofluoromethane	BQL	1.0	1	2/12/03
Vinyl Chloride	BQL	1.0	1	2/12/03

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
1,4-Dichlorobutane	40	40.4	101

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles
by GC 602

Client Sample ID: MW-1
Client Project ID: Scotchman #38
Lab Sample ID: 63066
Lab Project ID: G129-688

Analyzed By: JTF
Date Collected: 2/10/03
Date Received: 2/11/03
Matrix: Water

Analyte	Result ug/L	Report Limit ug/L	Dilution Factor	Date Analyzed
Benzene	BQL	1.0	1	2/13/03
Diisopropyl ether (DIPE)	BQL	1.0	1	2/13/03
Ethylbenzene	BQL	1.0	1	2/13/03
Methyl-tert butyl ether (MTBE)	**3.6**	2.0	1	2/13/03
Toluene	BQL	1.0	1	2/13/03
m/p-Xylene	BQL	2.0	1	2/13/03
o-Xylene	BQL	2.0	1	2/13/03

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	40.1	100

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles
by GC 602

Client Sample ID: MW-2
Client Project ID: Scotchman #38
Lab Sample ID: 63067
Lab Project ID: G129-688

Analyzed By: JTF
Date Collected: 2/10/03
Date Received: 2/11/03
Matrix: Water

Analyte	Result ug/L	Report Limit ug/L	Dilution Factor	Date Analyzed
Benzene	BQL	1.0	1	2/12/03
Diisopropyl ether (DIPE)	BQL	1.0	1	2/12/03
Ethylbenzene	BQL	1.0	1	2/12/03
Methyl-tert butyl ether (MTBE)	3.7	2.0	1	2/12/03
Toluene	BQL	1.0	1	2/12/03
m/p-Xylene	BQL	2.0	1	2/12/03
o-Xylene	BQL	2.0	1	2/12/03

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	40.1	100

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Ethylene Dibromide
by GC 504.1

Client Sample ID: MW-1
Client Project ID: Scotchman #38
Lab Sample ID: 63066
Lab Project ID: G129-688

Date Collected: 2/10/03
Date Received: 2/11/03
Date Analyzed: 2/18/03
Analyzed By: CLP

Compound	Result (ug/L)	Quantitation Limit	Method	Dilution Factor
Ethylene Dibromide	BQL	0.02	504.1	1.0

Comments:
BQL = Undetected or below quantitation limit.

N.C. Certification #481 S.C. Certification #99029 Reviewed By:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Ethylene Dibromide
by GC 504.1

Client Sample ID: MW-2
Client Project ID: Scotchman #38
Lab Sample ID: 63067
Lab Project ID: G129-688

Date Collected: 2/10/03
Date Received: 2/11/03
Date Analyzed: 2/18/03
Analyzed By: CLP

Compound	Result (ug/L)	Quantitation Limit	Method	Dilution Factor
Ethylene Dibromide	BQL	0.02	504.1	1.0

Comments:
BQL = Undetected or below quantitation limit.

Reviewed By:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Metals

Client Sample ID:	MW-1	Analyzed By:	RML
Client Project ID:	Scotchman #38	Date Collected:	2/10/03
Lab Sample ID:	63066	Date Received:	2/11/03
Lab Project ID:	G129-688	Matrix:	Water
Batch ID:	2590		

Metals	Result	Quantitation Limit	DF	Units	Method	Date Analyzed
Lead,Extractable	**44.0**	5.00	25	UG/L	6020	2/20/03

Comments
BQL = Below Quantitation Limits
DF = Dilution Factor
J = Between MDL and RL

Reviewed By:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Metals

Client Sample ID:	MW-2	Analyzed By:	RML
Client Project ID:	Scotchman #38	Date Collected:	2/10/03
Lab Sample ID:	63067	Date Received:	2/11/03
Lab Project ID:	G129-688	Matrix:	Water
Batch ID:	2590		

Metals	Result	Quantitation Limit	DF	Units	Method	Date Analyzed
Lead,Extractable	24.1	5.00	25	UG/L	6020	2/20/03

Comments
BQL = Below Quantitation Limits
DF = Dilution Factor
J = Between MDL and RL

Reviewed By:

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Delta Environmental Consultants

Project Name: Scotchman #38

Sample Information and Analytical Results	
Sample Identification	MW-1
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	02/10/03
Date Received	02/11/03
Date Extracted	02/11/03
Date Analyzed	02/11/03
Dry Weight	
Dilution Factor	1
C_5-C_8 Aliphatics**	< 100 (µg/L)
C_9-C_{12} Aliphatics**	< 100 (µg/L)
C_9-C_{10} Aromatics**	< 100 (µg/L)
Surrogate % Recovery - PID	91
Surrogate % Recovery - FID	100

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil

** = Excludes any surrogates or internal standards.

Lab Info: G129-688-63066

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Delta Environmental Consultants

Project Name: Scotchman #38

Sample Information and Analytical Results	
Sample Identification	MW-2
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	02/10/03
Date Received	02/11/03
Date Extracted	02/11/03
Date Analyzed	02/11/03
Dry Weight	
Dilution Factor	1
C_5-C_8 Aliphatics**	< 100 (µg/L)
C_9-C_{12} Aliphatics**	< 100 (µg/L)
C_9-C_{10} Aromatics**	< 100 (µg/L)
Surrogate % Recovery - PID	91
Surrogate % Recovery - FID	100

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil

** = Excludes any surrogates or internal standards

Lab Info: G129-688-63067

Reviewed By:

PARADIGM ANALYTICAL LABORATORIES, INC.

Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 12/26/02 PID Initial Calibration Date: 12/26/02

Calibration Ranges and Limits

Range	MDL (µg/L)	MDL (mg/Kg)	ML (µg/L)	ML (mg/Kg)	RL (µg/L)	RL (mg/Kg)
C_5-C_8 Aliphatics	9.3	0.41	29.4	1.3	100	10
C_9-C_{12} Aliphatics	7.9	0.3	25.2	0.97	100	10
C_9-C_{10} Aromatics	0.5	0.04	1.5	0.14	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD or CCC	Method of Quantitation
C_5-C_8 Aliphatics	20	2	4.0	Calibration Factor
	80	8		
	200	20		
	800	80		
	2000	200		
C_9-C_{12} Aliphatics	15	1.5	12.3	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C_9-C_{10} Aromatics	32.5	3.25	11.3	Calibration Factor
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date: 02/11/03

Calibration Check

Range	Levels (µg/L)	Levels (mg/Kg)	RPD
C_5-C_8 Aliphatics	200	20	-11.4
C_9-C_{12} Aliphatics	150	15	3.1
C_9-C_{10} Aromatics	325	32.5	3.0

MDL = Method Detection Limit
ML = Minimum Limit
RL = Reportable Limit
RPD = Relative Percent Difference
%RSD = Percent Relative Standard Deviation
CCC = Correlation Coefficient of Curve

Reviewed By:

PARADIGM ANALYTICAL LABORATORIES, INC.
2627 Northchase Parkway SE, Wilmington, NC 28405
Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC#

Page 1 **of** 1

Client: Delta Environmental Consultants
Address: 3205 Randall Pkwy Ste 104
Address: Wilmington, NC 28403
Quote #:

Project ID: Scotchman #38
Contact: Bryan Lievre
Phone: 910-772-2291
Fax: 910-254-0246

Date: 2/11/03
Turnaround: Standard
Job Number: XONC-057-C(.4090)
P.O. Number: —

Report To: Bryan Lievre
910-772-2291
Invoice To: Bryan Lievre

Sample ID	Date	Time	Matrix	Preservatives: HCl	Preservatives: HNO3			Analyses: 601/602	Analyses: VPH	Analyses: 5041(EDB)	Analyses: 3030C(Pb)							Comments: Please specify any special reporting requirements
																		G129-688
mw-1	2/10/03	1100	W	7	1			3	2	2	1							Turbid
mw-2	2/10/03	1200	W	7	1			3	2	2	1							Turbid

Relinquished By	Date	Time	Received By	Date	Time	Temperature
Edward Scott Conley	2/11/03	815	[signature]	2/11/03	0815	on ice 2.9°C

State Certification Requested

NC ____ SC ____ Other ____

SEE REVERSE FOR TERMS AND CONDITIONS

5r

North Carolina
Department of Environment and Natural Resources
Division of Waste Management
Underground Storage Tank Section
Fayetteville Regional Office

Michael F. Easley, Governor
William G. Ross Jr, Secretary
Dexter R. Matthews, Director

May 28, 2003

Mr. Don Quinn
Worsley Companies, Inc.
P.O. Box 3227
Wilmington, NC 28406

Re: Notice of Regulatory Requirements
5A NCAC 2L .0115(d)
Risk-based Assessment and Corrective Action for Petroleum Underground Storage Tanks
Scotchman #38
6261 Raeford Road
Fayetteville, Cumberland County
Incident # 29017
Low Risk Classification / Residential Land Use

Dear Mr. Quinn:

Information received by this office on March 24, 2003 confirmed a release or discharge from a petroleum underground storage tank (UST) system at the above-referenced site. Records indicate that Worsley Companies, Inc., is the responsible party for this release or discharge. This letter is a standard notice explaining the actions you must take as a result of the release or discharge in accordance with North Carolina statutes and rules. The UST Section of the Division of Waste Management administers the state's rules for USTs and the required response for petroleum releases. Those rules are located in Title 15A, Subchapter 2L and Title 15A, Subchapter 2N of the North Carolina Administrative Code (NCAC).

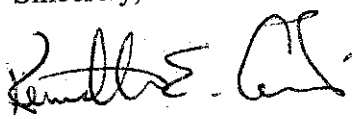
The risk-based rule for petroleum USTs, 15A NCAC 2L .0115(d), states that the Department shall classify the risk of each known discharge or release from the UST system. A review of the Limited Site Assessment prepared for the referenced incident and received on March 24, 2003, indicates that:

(1) The risk posed does not fall within the high or intermediate risk categories; and

(2) After review of site-specific information, limited assessment, or interim corrective action, the discharge or release poses no significant risk to human health or the environment.

If you have any questions regarding the actions that must be taken or the rules mentioned in this letter, please contact me at the letterhead address or at (910) 486-1541. If you have any questions regarding trust fund eligibility or reimbursement, please contact the UST Section Trust Fund Branch at (919) 733-8486.

Sincerely,



Kenneth E. Currie
UST Section

c: FRO Incident Management Files

Solutions-IES
Industrial & Environmental Services

1101 Nowell Rd. ■ Raleigh, NC 27607
(919) 873-1060 ■ Fax (919) 873-1074
www.solutions-ies.com

December 13, 2016

Mr. Terry Fox, L.G.
North Carolina Department of Transportation
Geotechnical Engineering Unit
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Reference: **Preliminary Site Assessment**
Jalaram Bapa Enterprises, LLC Property (Parcel #138)
6022 Raeford Road
Fayetteville, Cumberland County, North Carolina
State Project: U-4405
WBS Element 39049.1.1
SIES Project No. 2016.0054.NDOT

Dear Mr. Fox:

Solutions-IES, Inc., (SIES) has completed the Preliminary Site Assessment conducted at the above-referenced property. The work was performed in accordance with the Technical and Cost proposal dated September 26, 2016, and the North Carolina Department of Transportation's (NCDOT's) Notice to Proceed dated September 26, 2016. Activities associated with the assessment consisted of conducting a geophysical investigation, collecting soil samples for analysis, and reviewing applicable North Carolina Department of Environmental Quality (NCDEQ) records. The purpose of this report is to document the field activities, present the laboratory analyses, and provide recommendations regarding the property.

Location and Description

The Jalaram Bapa Enterprises, LLC Property (Parcel #138) is located at 6022 Raeford Road in Fayetteville, Cumberland County, North Carolina. The property is situated on the north side of Raeford Road approximately 750 feet west of the in intersection of Raeford Road and Skibo Road (**Figure 1**). The property consists of an active gas station and convenience store (Speedway Sunoco). The on-line UST registry information lists three underground storage tanks (USTs) at the site.

An asphalt parking area occupies the area on the south, east, and west sides of the building, and extends almost to the property boundaries. An attached metal canopy with four dispenser pumps is located in front of the building. The existing USTs are located under a concrete pad on the west side of the building (**Figure 2**). The proposed easement has not been marked at the site, but NCDOT plan sheets show that the easement will affect a small portion of the canopy, but not the USTs or building.

The NCDOT requested a Preliminary Site Assessment for the right-of-way and proposed easement because of the current site use as a gas station. The scope of work as defined in the Request for Technical and Cost Proposal was to evaluate the site with respect to the presence of known and unknown USTs and assess where contamination exists on the right-of-way/proposed easement. An estimate of the quantity of impacted soil is to be provided, should impacted soils be encountered.

SIES reviewed the on-line NCDEQ Incident Management database and Incident Number 13244 was assigned to the site. A further review of files regarding the incident from the NCDEQ Fayetteville Regional Office indicated that an Environmental Site Assessment (ESA), prepared by Groundwater and Environmental Services, Inc. and dated March 2009, was on file, but no other information was available. According to the ESA, a UST closure report was submitted in November 1994 that documented soil contamination in the UST area. Within the ESA, the following chronology was documented:

- January 1995 – NCDENR (now NCDEQ) issued a Notice of Regulatory Requirements (NORR) for corrective action.
- January 1995 – A Pollution Incident Form was filed with NCDENR and incident number 13244 was assigned to the site.
- March 1995 – An Initial Site Characterization was submitted.
- July 1996 – A Comprehensive Site Assessment (CSA) was submitted. The CSA detailed the assessment of soil and groundwater. A limited number of petroleum compounds were detected in soil, but numerous compounds at concentrations above the standards were detected in the groundwater. A Corrective Action Plan (CAP) was recommended.
- September 1998 – A Limited Soil and Groundwater Sampling Report and Site Closure Request was submitted. The report documented analytical results that showed no compounds present in the soil or groundwater above the industrial/commercial Maximum Soil Contaminant Concentrations (MSCC) for soil or the Gross Contaminant Levels (GCLs) for groundwater.
- February 1999 – A No Further Action (NFA) letter was issued for the site.
- March 2003 – Additional soil samples were collected from the site as part of a real estate transaction. No concentrations were detected above those previously recorded.
- June 2003 – The UST Section requested a Notice of Residual Petroleum (NORP) to be registered with the Register of Deeds in Cumberland County.

In March 2009, the ESA report was prepared because of another potential real estate transaction. Five monitoring wells were installed and soil samples were collected from the borings as well as groundwater samples following well installation. The analyses confirmed that soil and groundwater contamination was present at the site, but at concentrations consistent with those covered by the NFA letter. The ESA is presented in **Attachment A**.

SIES also examined the UST registration database to obtain and update UST ownership information. According to the database, the USTs on the property were operated under Facility Number 00-0-0000011727. The database indicated that three 10,000-gallon gasoline USTs are registered to the site. The owner and operator of record for the tanks are listed as follows:

Owner	Operator
Jalaram Bapa Enterprises, LLC	Raeford Road Sunoco
6022 Raeford Road	6022 Raeford Road
Fayetteville, NC 28304	Fayetteville, NC 28304

Geophysical Survey

Prior to SIES' mobilization to the site, Pyramid Environmental & Engineering of Greensboro, NC (Pyramid) conducted a geophysical survey to confirm the presence of the known USTs and determine if additional USTs were present in in the area of the right-of-way/proposed easement. The geophysical survey consisted of an electromagnetic survey using a Geonics EM61 time-domain electromagnetic induction meter to locate buried metallic objects, and specifically looking for USTs.

A survey grid was laid out along the right-of-way/proposed easement with the X-axis oriented approximately parallel to Raeford Road and the Y-axis oriented approximately perpendicular to Raeford Road. The grid was positioned to cover the entire right-of-way/proposed easement.

The survey lines were spaced 10 feet apart and magnetic data were collected continuously along each survey line with a data logger. After collection, the data were reviewed in the field with graphical computer software. The presence of USTs in the known UST basin was confirmed. Additional anomalies were attributed to visible cultural features and known utilities. For these reasons, a ground penetrating radar survey was not required to verify any unknown EM anomalies.

Access was available to all areas of the property and several anomalies were detected with the geophysical survey. No unknown metallic USTs were detected within the geophysical survey area. Pyramid's detailed report of findings and interpretations is presented in **Attachment B**.

Site Assessment Activities

On October 27, 2016, SIES mobilized to the site to conduct a Geoprobe® direct-push investigation to evaluate subsurface soil conditions on the property. Six direct-push holes (138-SB-1 through 138-SB-6) were drilled in the right-of-way/proposed easement. The first two borings (138-SB-1 and -2) were advanced to a depth of 12 feet below ground surface (ft bgs). Groundwater was encountered between six and seven ft bgs in these borings, therefore the remaining borings were terminated at six ft bgs.

Boring locations are shown on the site map on **Figure 2.** The soil boring logs are included as **Attachment C**. Borings 138-SB-1 and 138-SB-2 were located to evaluate the subsurface conditions in the western side of the property. Borings 138-SB-3 and 138-SB-4 were placed to assess the conditions at the canopy and dispensers, and borings 138-SB-5 and 138-SB-6 were located to evaluate the subsurface on the eastern part of the property on the right-of-way/proposed easement (see photos in **Attachment D**).

Continuous sampling using a Geoprobe® resulted in good recovery of soil samples from the direct-push holes. Soil samples were collected and contained in four-foot long acetate sleeves inside the direct-push Macro-Core® sampler. Each of the sleeves was divided into two-foot long sections for soil sample screening. Soil from each two-foot interval was placed in a resealable plastic bag and the bag was set aside for volatilization of organic compounds from the soil to the bag headspace. A photoionization detector (PID) probe was inserted into the bag and the reading was recorded (**Table 1**). Following the completion of boring 138-SB-2, the PID malfunctioned and no field screening could be performed for the remaining borings. Therefore, the two bottom samples from each boring thereafter were submitted for analysis.

The selected soil samples were submitted to an on-site mobile laboratory for analysis of total petroleum hydrocarbons (TPH) diesel range organics (DRO) and gasoline range organics (GRO) using ultraviolet fluorescence (UVF) methodology. Each boring was backfilled with bentonite and drill cuttings to the surface after completion.

The lithology encountered by the direct-push samples was generally consistent throughout the site. The ground surface was covered with about 0.5 feet of asphalt or topsoil. Below this surface cover to a depth of about two feet was a mottled tan and red silty sand. Groundwater was observed at a depth of between six and seven ft bgs. No bedrock was noted in any of the borings.

According to the 1985 Geologic Map of North Carolina, the site is within of Coastal Plain Physiographic Province in North Carolina near the contact between the Cretaceous Black Creek and Middendorf Formations. The strata of the Black Creek Formation consist of gray to black clay, thin lenses of fine-grained sand and thick lenses of cross-bedded sand. The lithology may also include glauconite and fossils. In comparison, the Middendorf Formation consists of sand, sandstone, and mudstone that are laterally discontinuous. The soils observed at the site are consistent with the MIddendorf Formation as the parent material.

Analytical Results

The laboratory data are summarized in **Table 1** and the complete report is presented in **Attachment E**. Eleven soil samples were submitted for analysis (multiple samples were collected from all borings except 138-SB-1). Of these samples, four contained detectable GRO compounds and ten contained detectable DRO compounds. Detected GRO concentrations ranged from 0.84 to 2.1 milligrams per kilogram (mg/kg). Detected DRO concentrations ranged from 0.62 to 59.7 mg/kg. The action levels are 50 mg/kg for GRO and 100 mg/kg for DRO[1]. None of the soil samples analyzed for this site contained DRO or GRO concentrations above their respective action levels.

Conclusions and Recommendations

A Preliminary Site Assessment was conducted to evaluate the Jalaram Bapa Enterprises LLC Property (Parcel #138) located at 6022 Raeford Road in Fayetteville, Cumberland County, North Carolina. Documents within the NCDEQ UST Section files indicated that a previous release occurred at the site. Soil and groundwater contamination were detected after removal of several USTs in 1995. The contaminant concentrations were below the industrial/commercial MSCC the GCLs for groundwater. Based on the analyses, a No Further Action letter was issued in 1999.

A geophysical survey conducted at the site indicated that no unknown metallic USTs were present within the geophysical survey area of the site. Six soil borings were advanced to evaluate the subsurface soil conditions along the right-of-way/proposed easement, from which 11 soil samples were collected. Four of the 11 soil samples analyzed had a GRO concentration above the detection limit, and 10 of the 11 soil samples had DRO concentrations were present above the detection limit. However, none of the DRO or GRO concentrations were above their respective action limits.

None of the soil samples had contaminant concentrations above applicable action levels (Table 1). Therefore, no estimate of the volume of soil requiring possible remediation was made.

[1] NCDEQ, *Guidelines for North Carolina Action Limits for Total Petroleum Hydrocarbons (TPH)*, July 26, 2016,

SIES appreciates the opportunity to work with the NCDOT on this project. Because compounds were detected above the method detection limit in the soil samples, SIES recommends that a copy of this report be submitted to the Division of Waste Management, UST Section, in the Fayetteville Regional Office. If you have any questions, please contact us at (919) 873-1060.

Sincerely,

Michael W. Branson, P.G.
Project Manager

Attachments

John Palmer, P.G.
Senior Hydrogeologist

TABLE 1
SOIL FIELD SCREENING AND ANALYTICAL RESULTS
JALARAM BAPAS ENTERPRISES, LLC PROPERTY (PARCEL #138)
FAYETTEVILLE, CUMBERLAND COUNTY, NORTH CAROLINA
STATE PROJECT: U-4405
WBS ELEMENT 39049.1.1
SIES PROJECT NO. 2016.0054.NDOT

SAMPLE ID	DEPTH (ft)	PID READING (ppm)	SAMPLE ID	ANALYTICAL RESULTS (mg/kg)	
				UVF GRO	UVF DRO
	Action Level (mg/kg)			50	100
138-SB-1	0 - 2	0.2			
	2 - 4	0.6			
	4 - 6	0.6	138-SB-1-4-6	**1.7**	**40.8**
	6 - 8	NA			
	8 - 10	NA			
	10 - 12	NA			
138-SB-2	0 - 2	0.6			
	2 - 4	6.7	138-SB-2-2-4	<0.6	**2.9**
	4 - 6	38.7	138-SB-2-4-6	**0.84**	**59.7**
	6 - 8	0.5			
	8 - 10	9.5			
	10 - 12	11.6			
138-SB-3	0 - 2	NA			
	2 - 4	NA	138-SB-3-2-4	<0.58	**52**
	4 - 6	NA	138-SB-3-4-6	<0.6	**33.7**
138-SB-4	0 - 2	NA			
	2 - 4	NA	138-SB-4-2-4	**1.2**	**5.3**
	4 - 6	NA	138-SB-4-4-6	<0.56	**17.8**
138-SB-5	0 - 2	NA			
	2 - 4	NA	138-SB-5-2-4	<0.78	<0.78
	4 - 6	NA	138-SB-5-4-6	<0.73	**0.73**
138-SB-6	0 - 2	NA			
	2 - 4	NA	138-SB-6-2-4	**2.1**	**0.62**
	4 - 6	NA	138-SB-6-4-6	<0.59	**1.6**

1) ft - feet
2) ppm - parts per million.
3) PID - photoionization ionization detector
4) mg/kg - milligrams per kilogram.
5) UVF DRO - Diesel range organics by UVF.
6) UVF GRO - Gasoline range organics by UVF.
7) Action level based upon NCDEQ memo *Guidelines for North Carolina Action Limits for Total Petroleum Hydrocarbons* - July 29, 2016.
8) Soil samples were collected on October 27, 2016.
9) NS - Not sampled due to groundwater
10) **Bold** values are above the detection level.
11) NA - Not applicable due to malfuntioning screening equipment

Solutions-IES
Industrial & Environmental Services

FIGURES

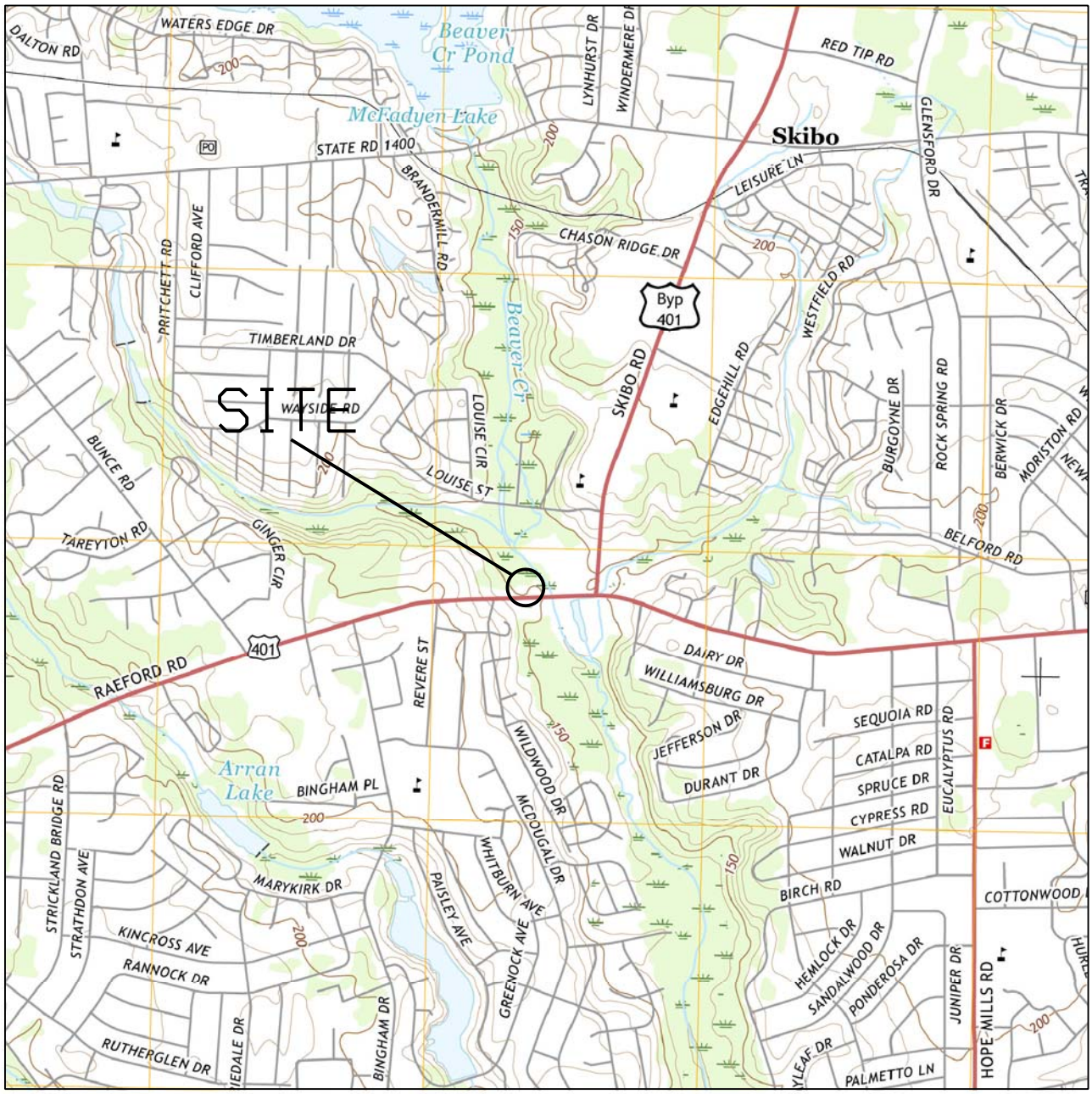
PROJECT NUMBER 2016.0054.NDOT

CHECKED BY JEP

PROJECT MANAGER MWB

DATE NOVEMBER 2016

FILE FAYETTEVILLE PSAS



SCALE 1:24,000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

SOURCE: U.S. GEOLOGICAL SURVEY 7.5 MIN QUADRANGLE: FAYETTEVILLE, NC (2016)

Solutions-IES
Industrial & Environmental Services
1101 NOWELL ROAD
RALEIGH, NORTH CAROLINA 27607
TEL: (919) 873-1060 FAX: (919) 873-1074

VICINITY MAP

JALARAM BAPA ENTERPRISES LLC PROPERTY (PARCEL #138)
FAYETTEVILLE, CUMBERLAND COUNTY NORTH CAROLINA

FIGURE 1

PROJECT NUMBER 2016.0054.NDOT

DRAFTER MWB

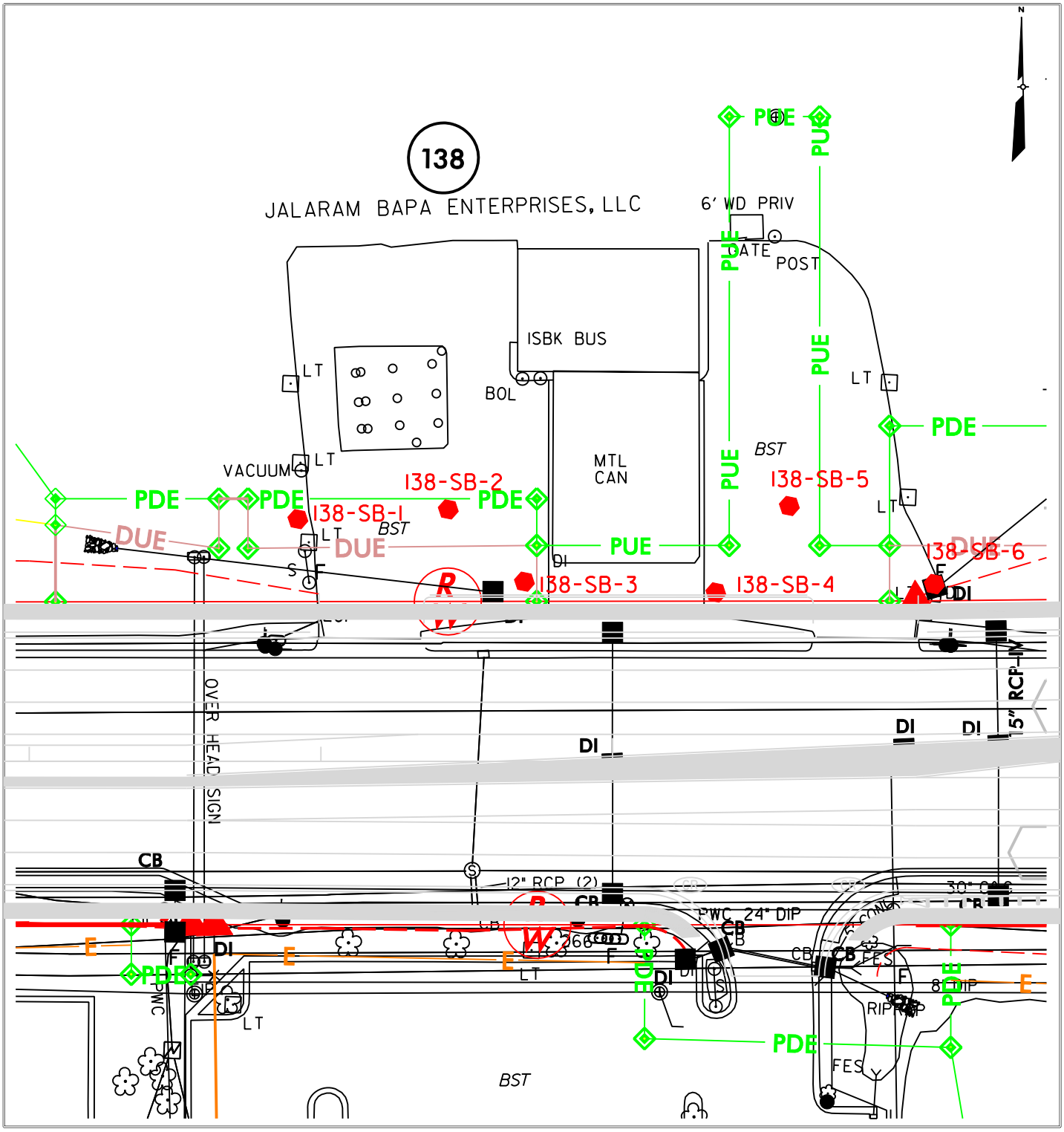
CHECKED BY JEP

PROJECT MANAGER MWB

DATE NOVEMBER 2016

FAYETTEVILLE PSAS

FILE



LEGEND

138-SB-1

SOIL SAMPLE LOCATION AND IDENTIFICATION

0 25 50

GRAPHIC SCALE (FEET)

Solutions-IES
Industrial & Environmental Services
1101 NOWELL ROAD
RALEIGH, NORTH CAROLINA 27607
TEL: (919) 873-1060 FAX: (919) 873-1074

SITE MAP

JALARAM BAPA ENTERPRISES LLC PROPERTY (PARCEL #138)

FAYETTEVILLE, CUMBERLAND COUNTY, NORTH CAROLINA

FIGURE 2

...\reports\FIGURES\138.dgn 12/12/2016 4:20:42 PM

ATTACHMENT A

Environmental Site Assessment Report

Sunoco DUNS #0614-8506
6022 Raeford Road
Fayetteville, North Carolina

Prepared for:

Mr. Scott Cullinan
Sunoco, Inc.
350 Eagleview Boulevard
Exton, Pennsylvania 19342

Prepared by:

Groundwater and Environmental Services, Inc.
3344 Hillsborough Street
Suite 150
Raleigh, North Carolina 27607

March 2009

Hillary Shoreland
Associate Environmental Scientist

Eli Holland
Project Manager

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1.0 INTRODUCTION

Sunoco retained Groundwater and Environmental Services, Inc. (GES) to complete an Environmental Site Assessment of Sunoco DUNS #0614-8506 located at 6022 Raeford Road, Fayetteville, North Carolina (the Property). The Property is referenced as Sunoco DUNS #0614-8506, and consists of an active retail petroleum fuel station.

The purpose of this ESA was to evaluate current subsurface conditions at the Property. Monitoring wells were installed at strategic locations through out the Property. Soil samples were collected during well installation and analyzed by Pace Laboratories (Pace) of Huntersville, North Carolina. Following well installation, the wells were developed and a representative groundwater sample was collected from each location. The ESA scope of work is as follows:

- Installation of five (5) groundwater monitoring wells;
- Screening and classification of soil cuttings;
- Collection and laboratory analysis of soil samples for volatile organic carbons (VOCs) by EPA Method 8260 and semi-volatile organic compounds (SVOCs) by EPA Method 8270;
- Gauging, development and surveying of groundwater monitoring wells;
- Collection and laboratory analysis of groundwater samples for VOCs by EPA Method 8260 and SVOCs by EPA Method 8270; and
- Completion of a local area survey.

2.0 BACKGROUND

2.1 Site Description and Features

The Property is located at 6022 Raeford Road, in Fayetteville, North Carolina. **Figure 1** shows the approximate location of the Property on the USGS topographic quadrangle map for Fayetteville, North Carolina. The approximate geographical coordinates for the Property are 35 degrees, 2 minutes, 41.03 seconds North (Latitude) by 78 degrees, 58 minutes, 43.14 seconds West (Longitude). The approximate ground surface elevation is 147 feet above mean sea level (AMSL).

The 0.86-acre property is currently used as an active Sunoco petroleum filling station. There are four (4) dispenser islands with eight (8) multi-product dispensers on the Property. The UST field contains three (3) 10,000-gallon gasoline USTs and is located near the northwest corner of the Property. **Figure 2** shows a Site Map with the approximate locations of the existing site features at the time of the ESA.

The Property is zoned for commercial use. The surrounding properties are mixed commercial and wooded land. No private potable or irrigation wells were observed during the local area survey. Municipal water is supplied to the Property and surrounding area by the City of Fayetteville.

2.2 Physical Setting

The Property is located in the within the western portion of Cumberland County, North Carolina. . This portion of Cumberland County lies within the Atlantic Coastal Plain province and consists of long ridges and hills, with a generally moderate relief. The upper deposits across most of the county consist of surficial sediments except in the sandhill region where leached beds of the Middendorf formation occur. Remnants of the Castle Hayne Limestone formations probably cap some high hills in the Fort Bragg Reservation (Schipf, Robert G., 1961).

The Black Creek formation overlies the Middedorf formation in the southern, eastern and central part of the county. The Black Creek formation typically consists of thin layers of brownish to black clay alternating with thin layers of gray to white fine-grained quartz sand which can bebedded. The Middendorf formation, which crops out through most of Cumberland County consists of beds of tan to reddish-brown loose to fairly well consolidated sandy clay with loose surficial sands. The formation is approximately 120 feet thick at the northwest corner of the county and at least 300 feet thick in the southern part (Schipf, Robert G., 1961).

Topographic and geologic features observed during the ESA field activities indicated apparent groundwater flow to be to the north. **Figure 3** provides a groundwater contour map, which depicts actual groundwater flow to be in the northern direction.

2.3 Adjacent Property Land Use

The immediately adjoining properties are summarized as follows:

- The Property is bordered to the north, northeast, and northwest by undeveloped wooded land. The rear parking lot for Ed's Auto Service and Salvage is located approximately 250 feet northeast and downgradient of the Site. Properties to the north are located crossgradient of the Sunoco station. Properties to the northeast of the subject Site are located downgradient of the Sunoco station.

- The Property is bordered to the south by Raeford Road. A commercial building featuring a Family Dollar store is located farther south across Raeford Road. Vacant wooded land is located farther south behind the commercial building and to the southeast and southwest of the subject Site. Properties to the south and southeast are located crossgradient of the Sunoco Station. Properties to the southwest of the subject Site are located upgradient of the Sunoco station.
- The Property is bordered to the east by undeveloped wooded land. Ed's Auto Service and Salvage is located approximately 500 feet east of the station. A NCDENR incident number has not been assigned to the Ed's Auto Service and Salvage however hydraulic lifts are used at the property. Properties to the east are located crossgradient of the Sunoco Station.
- The Property is bordered to the west by undeveloped wooded land. Properties to the west are located crossgradient of the Sunoco Station.

2.4 Existing/Former Environmental Cases

Prior to use as a Sunoco fuel station, the Site was operated as EMRO Store #203 (Speedway / Starvin Marvin). In November 1994, an Underground Storage Tank and Piping Closure Report was submitted by ERMO Marketing Company to NCDENR summarizing piping excavation activities at EMRO Store #203 (Speedway / Starvin Marvin). Soil impacts were detected in samples collected from the pipeline excavation above state standards.

NCDENR issued a Notice of Regulatory Requirement (NORR) on January 3, 1995 requesting corrective action and documentation following the discovery of the release. A Pollution Incident / UST Leak Reporting Form was completed and filed with the NCDENR on January 10, 1995. The Pollution Incident Form lists Mr. Chris Shimmel of ERMO Marketing Company as the potential source owner-operator. ERMO Store #203 was assigned NCDENR incident number 13244 and a site priority ranking of 030D.

On March 13, 1995, ERMO Marketing Company submitted an Initial Abatement Report developed by S&MI, Inc to the NCDENR. An Initial Site Characterization Report was submitted by S&ME, Inc. on behalf of ERMO Marketing Company on March 21, 1995. On July 18, 1996, a Comprehensive Site Assessment (CSA) report was completed by S&ME, Inc and submitted to the NCDENR on behalf of ERMO Marketing Company. The CSA report summarized investigative activities conducted by S&ME, Inc between February and July 1995 as listed below:

- In February and March 1995, an initial soil and groundwater investigation was conducted by S&ME, Inc. in the vicinity of UST field, dispensers and product piping. Seventeen hand auger boring were completed and four groundwater monitoring wells were installed. Concentrations of Total Petroleum Hydrocarbons (TPH) for gasoline and diesel exceeded state regulations in one soil sample. Analysis of groundwater samples collected from the four monitoring wells indicated several compounds above the NC 2L standard including lead.
- In May 1995, additional soil and groundwater assessment was completed. Two hand auger borings were completed and four additional monitoring wells were installed. Analysis of soil samples did not detect any concentrations of TPH for gasoline above state action levels. Analysis of groundwater samples collected from the four existing and four additional monitoring wells detected concentrations in excess of NC 2L standards.
- In July 1995, one temporary well was installed and abandoned onsite. Analysis of the groundwater sample collected from the temporary well did not reveal any detections above NC 2L standards.

Based on the data presented in the CSA, a Corrective Action Plan (CAP) was recommended to be developed to remediate soil and groundwater at the Site.

On September 23, 1998, a Limited Soil and Groundwater Sampling Report and Site Closure Request was developed by S&ME, Inc. and submitted to the NCDENR. Soil and groundwater sampling was conducted at the Site in an effort to determine the Site's eligibility for site closure. Two soil samples were collected from the area previously identified as containing the highest onsite soil contamination. One groundwater sample was collected from MW-5 which was previously identified as containing the highest dissolved hydrocarbon concentrations. Analytical results of the soil and groundwater samples did not detect any constituents above North Carolina Industrial/Commercial Maximum Soil Contamination Concentrations (MSCCs) or North Carolina Gross Contaminant Levels (GCLs). A closure request was included in the report citing detections of hydrocarbon concentrations below station action levels as reason for closure.

A Notice of No Further Action (NFA) was issued by the NCDENR for the Property on February 3, 1999. All necessary public notifications were documented in a letter from S&ME, Inc. dated March 30, 1999. Eight monitoring wells were abandoned on March 29, 1999. Well abandonment activities were summarized in a letter from S&ME, Inc. dated March 31, 1999.

In March 2003, soil and groundwater samples were collected at the Site at the request of Speedway SuperAmerica, LLC (former property and UST owners) and Sunoco, Inc (new property and UST owners) as part of the property transaction. Split samples were collected by S&ME, Inc. and ATC Associates, Inc from three locations previously identified as containing the highest levels of hydrocarbon concentrations. Analytical detections were not higher than those previously recorded at the site in September 1998 or not higher than the cleanup levels established by the state at the time of the NFA.

On June 26, 2003, the NCDENR issued a NORR requesting a Notice of Residual Petroleum (NORP) be completed and filed with the Cumberland County Register of Deeds. The NORP was signed by Scott Hiser of Speedway SuperAmerica, LLC and Gene Jackson of the Fayetteville NCDENR Regional Office and filed with the Cumberland County Register of Deeds on August 7, 2003.

3.0 ENVIRONMENTAL SITE ASSESSMENT ACTIVITIES

3.1 Monitoring Well Installation and Soil Classification

Five soil borings and monitoring wells were installed at the Property on February 9, 2009. Monitoring well locations were designated in the field based on current and past site features and existing subsurface utilities. Monitoring well locations are presented in **Figure 2.**

Prior to the initiation of subsurface investigation activities, a public utility mark out was requested using North Carolina's One-Call utility locating service. Underground electric lines were marked out between a light located on the southeast corner of the Property to the northeast corner of the convenience store building. An underground gas line and storm sewer pipe was located along the southern boundary of the Property along Raeford Road. Tank vent lines were observed adjacent to the UST field. Each well location was designated to avoid disturbing subsurface utilities and to stay outside "critical areas" including product and vent lines associated with the UST system. Once final field locations were established, each of the proposed boring / well locations was then hand augured to a minimum of five feet below ground surface (bgs).

Soil borings were installed using a direct push hollow stem auger drill rig. Soil samples were continuously collected every five feet and screened for total organic vapors (TOVs) utilizing a photoionization detector (PID), calibrated to an isobutylene standard. One soil sample from each soil boring was submitted for laboratory analysis based on the highest PID reading and/or the observed depth to water. Soil samples were placed in laboratory-provided glassware, packed on ice in shipping containers and submitted under proper chain-of-custody to the Pace Laboratory of Huntersville, North Carolina.

At each of the soil boring locations, permanent groundwater monitoring wells were installed using 2-inch diameter slotted Schedule 40 polyvinyl chloride (PVC) screen and solid PVC riser to grade. The annular space between the well screen and the borehole wall was backfilled with clean, #2 filter pack silica sand to approximately 2.5 feet above the screened interval, and topped with a hydrated bentonite seal to 0.5 feet bgs. The remaining annular space was grouted with concrete grout, and the monitoring well was completed with a metal flush-mount protective cover within a concrete pad. Between each boring / monitoring well location, non-disposable drilling equipment and hand tools were decontaminated with a high-pressure water rinse. Well construction information was recorded by the supervising field geologist and was used to generate the soil boring logs / well construction diagrams included in **Appendix A.**

Each monitoring well was subsequently developed by surging / bailing technique and allowed to recharge to promote effective hydraulic equilibrium with the surrounding formation. Development efforts continued until the discharge was relatively clear and turbid free. Decontamination and development fluids were handled in accordance with state and local regulations.

Specific details related to the drilling and monitoring well installation activities at the Property are listed below.

Date Performed	February 9, 2009
Well ID	GMW-1, GMW-2, GMW-3, GMW-4, and GMW-5
Driller	Quantex, Inc of Clayton, NC
Drilling Method Utilized	Direct push air rotary auger
Completion Depths	GMW-1: 13 feet GMW-2: 17.5 feet GMW-3: 13 feet GMW-4: 13 feet GMW-5: 13 feet
Screened Interval	GMW-1: 13-3 feet GMW-2: 13-3 feet GMW-3: 13-3 feet GMW-4: 13-3 feet GMW-5: 13-3 feet
Material Utilized	2-inch diameter 0.020 machine-slotted schedule-40 polyvinyl chloride (PVC) well screen with a flush threaded 2-inch diameter solid PVC casing
Annular Space	#2 Sand to two feet above the well screen Bentonite grout slurry to 0.5 foot below grade Concrete to grade
Soil Sample Intervals	GMW-1: 5.0 – 7.5 feet GMW-2: 7.5 – 10.0 feet GMW-3: 7.5 – 10.0 feet GMW-4: 2.5 – 5.0 feet GMW-5: 2.5 – 5.0 feet
Soil Analyses Conducted	Volatile Organic Compounds (VOCs) via EPA Method 8260 and Semi Volatile Organic Compounds (SVOCs) via Method 8270

3.2 Well Elevation and Survey Procedures

Upon completion of the monitoring wells, each location was field-surveyed to determine relative top of casing (TOC) elevations. Lateral locations of the monitoring wells were field-measured and the resulting estimated locations are shown on **Figure 2**.

3.3 Groundwater Sampling and Analysis Procedures

Prior to the collection of groundwater samples, each of the recently-installed groundwater monitoring wells at the Property were gauged with an oil-water interface probe to determine the water level and check for the presence of Liquid Phase Hydrocarbons (LPH). Depth to groundwater and depth to product was measured from the TOC. The resulting data was then used to calculate the groundwater elevation and groundwater flow direction for the property, as documented on the Groundwater

Monitoring Map included as **Figure 3.** The measured depths and calculated elevations are shown in **Table 1.**

On February 10, 2009, field sampling personnel collected representative groundwater samples from the recently-installed monitoring wells. A minimum of three (3) well volumes were purged from each monitoring well prior to the collection of groundwater samples. Purging and sample collection was accomplished using dedicated bailers for each monitoring well. Aqueous samples were placed in laboratory-provided glassware, packed on ice in shipping containers, and submitted under proper chain-of-custody to the Pace Laboratory.

Equipment used for groundwater sampling consisted of new, disposable materials, or was properly decontaminated between sample locations. Sampling personnel exchanged nitrile sampling gloves between each sample location to minimize the potential for sample cross-contamination. Investigative-derived waste (IDW) such as used nitrile gloves were properly handled as non-hazardous solid waste for disposal.

Date Performed	**February 10, 2009**
Wells Gauged/ Sampled	GMW-1, GMW-2, GMW-3, GMW-4, and GMW-5
Wells Gauged Only	None
Liquid Phase Hydrocarbon	None Detected
Minimum / Maximum Depth to Water	7.12 feet/8.73 feet
Groundwater Flow Direction	Northeast
Aqueous Analyses Conducted	VOCs via EPA Method 8260 and SVOCs via EPA Method 8270

4.0 EVALUATION AND PRESENTATION OF RESULTS

4.1 Soil Sampling Results

Soil samples analyzed by Pace Laboratories detected the presence of petroleum constituents above North Carolina Soil-to-Water Maximum Contaminant Concentrations (MSCCs) however concentrations did not exceed the Industrial / Commercial MSCC standards. The maximum contaminant concentrations and the monitoring well in which they were detected are listed in the table below.

Compound	Maximum Concentration Detected (ug/Kg)	Soil-to-Water MSCC (ug/Kg)	Industrial / Commercial MSCC (ug/Kg)	Monitoring Well
Benzene	16	5.6	164,000	GMW-5

Soil analytical results for the collected samples are summarized in **Table 2**, along with the soil sample location, depth, and PID detection. The Laboratory Analytical Report and the corresponding chain-of-custody are included in **Appendix B.**

4.2 Groundwater Sampling Results

Groundwater samples analyzed by Pace Laboratories detected the presence of petroleum constituents at levels above their respective North Carolina Groundwater Quality Standards (2L) however no petroleum constituents were detected in levels exceeding North Carolina Gross Contamination Levels for Groundwater (GCLs). The maximum contaminant concentrations which exceeded their respective 2L concentrations and the monitoring well in which they were detected are listed in the table below.

Compound	Maximum Concentration Detected (ug/L)	2L Standard (ug/L)	GCL Standard (ug/L)	Monitoring Well
Benzene	873	1	5,000	GMW-1
Total Xylenes	1,770	530	87,500	GMW-1
Naphthalene	121	21	15,500	GMW-2
Methyl tert-butyl ether (MTBE)	256	200	200,000	GMW-1
2-Methylnaphthalene	32.6	14	15,500	GMW-2

Groundwater analytical results from the collected samples are summarized in **Table 3.** The Laboratory Analytical Report and the corresponding chain-of-custody are included in **Appendix B.**

5.0 LOCAL AREA SURVEY

A survey of the local area surrounding the Property was conducted on February 9, 2009. GES attempted to locate and identify potential sensitive receptors such as potable wells, basements, and schools.

- A surface water body (Beaver Creek) was observed approximately 120 feet northeast and downgradient of the Property. Beaver Creek was observed flowing to the southeast towards Raeford Road.
- Ed's Auto Repair and Salvage, a garage and vehicle repair facility, is located approximately 500 feet east and crossgradient of the Property. The rear parking lot for Ed's Auto Repair and Salvage is located approximately 250 feet northeast and downgradient of the subject Site. No NCDENR incident numbers were identified for the repair facility however hydraulic lifts are in use.
- Undeveloped wooded land is located west and crossgradient of the Property.
- The Property is bordered to the north, northeast, and northwest by undeveloped wooded land. Properties to the north are located crossgradient of the Sunoco station. As previously stated, the rear parking lot for Ed's Auto Service and Salvage is located approximately 250 feet northeast and downgradient of the Site.
- The Property is bordered to the south by Raeford Road. A commercial building featuring a Family Dollar store is located farther south across Raeford Road. Vacant wooded land is located farther south behind the commercial building and to the southeast and southwest of the subject Site. Properties to the south and southeast are located crossgradient of the Sunoco Station. Properties to the southwest of the subject Site are located upgradient of the Sunoco station.

6.0 DISCUSSION OF FINDINGS AND CONCLUSIONS

On February 9, 2009, five (5) groundwater monitoring wells were installed to assess current soil and groundwater conditions at the Property.

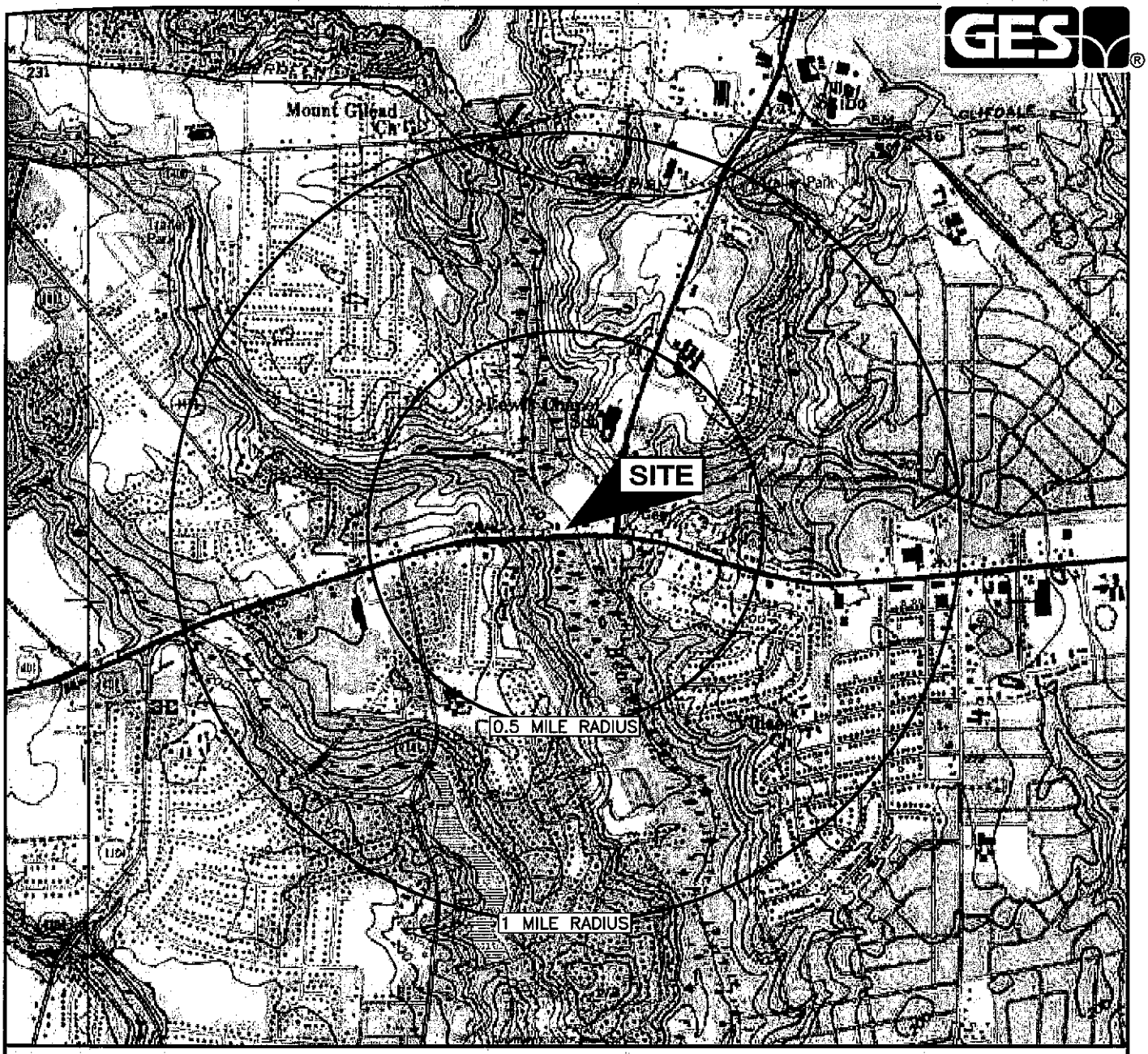
Laboratory analysis of soil samples detected the presence of benzene above the North Carolina Soil-to-Water MSCCs of 5.6 ug/Kg however benzene was not detected above the Industrial / Commercial MSCC standard previously established for the Site.

Laboratory analysis of groundwater samples detected the presence of benzene, total xylenes, naphthalene, MTBE, and 2-methylnaphthalene above NC 2L standards however analytical detections did not exceed the NC GCL standards previously established for the Site.

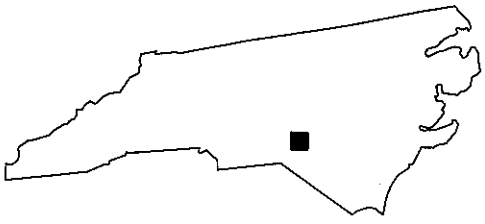
The highest analytical detections were reported in samples collected from GMW-1 and GMW-2. GMW-1 and GMW-2 were installed northeast and downgradient of the dispenser islands. In the CSA conducted by S&ME, Inc. and submitted to NCDENR in March 1995, groundwater analytical results detected the highest concentrations of petroleum contaminants in MW-4. GMW-2 was installed in the vicinity of MW-4, and GMW-1 was installed downgradient of GMW-2.

Detections of petroleum contaminants in the vicinity of MW-4 have decreased since samples were last collected on March 20, 1995. Concentrations of benzene, ethylbenzene, toluene, xylenes, and naphthalene have decreased 43.7%, 38.8%, 99.2%, 33.4%, and 60.5% respectively. No detections were reported in higher concentrations during this ESA conducted by GES.

Concentrations of contaminants of concern appear to have generally decreased over time. Upon the receipt of the Soil Cleanup Report with Site Closure Request in 1999, NCDENR issued a NFA. Current soil and groundwater analytical detections remain below the Industrial / Commercial MSCC and GCL groundwater standard previously established for the Site. Therefore, GES does not recommend any further assessment or remediation activities at this Property.



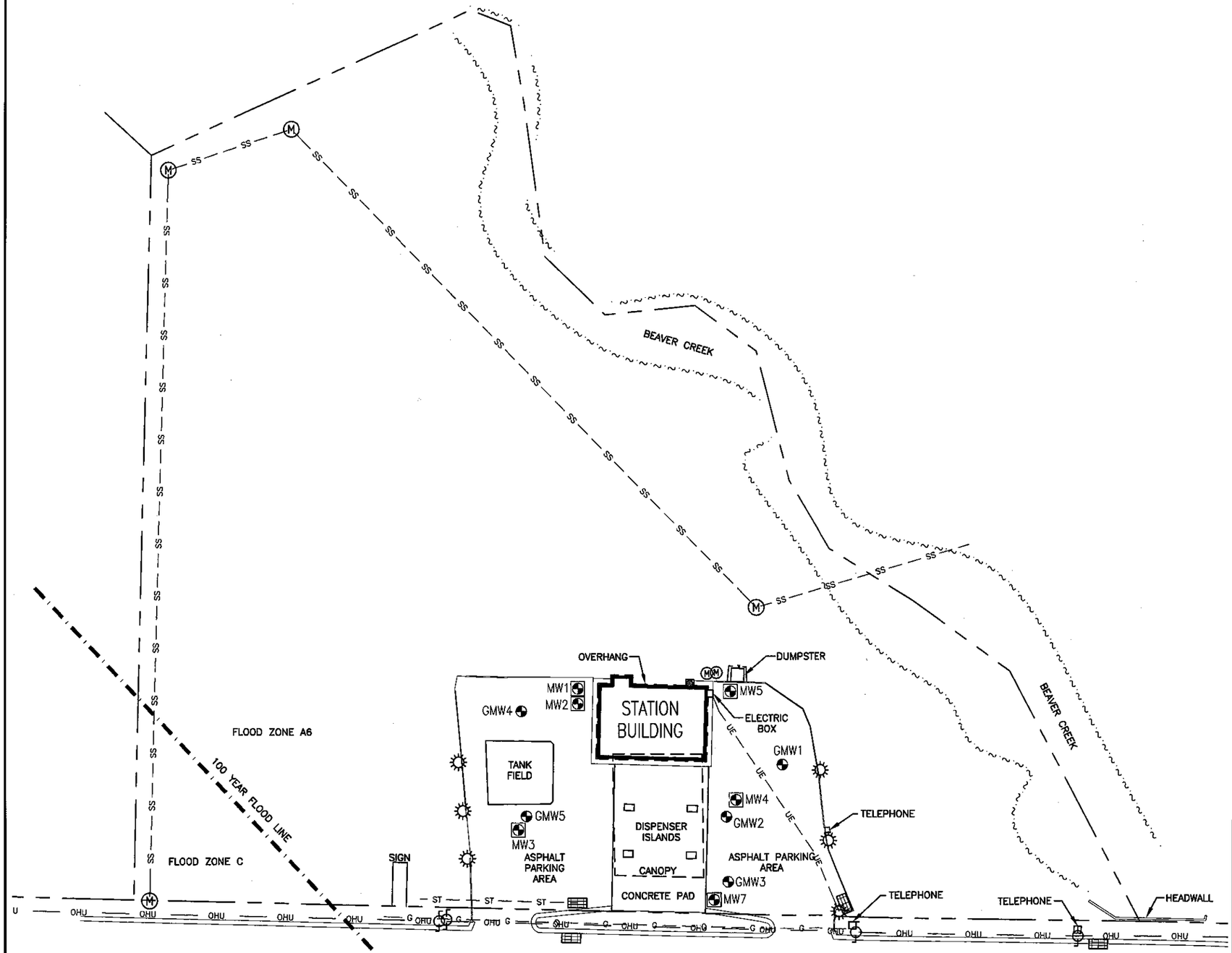
SOURCE: USGS 7.5 MINUTE SERIES
TOPOGRAPHIC QUADRANGLE 1987
FAYETTEVILLE, NORTH CAROLINA
CONTOUR INTERVAL = 10'



QUADRANGLE LOCATION

LAT. 035° 02' 41.03" N
LONG. 078° 58' 43.14" W
(APPROXIMATE SITE COORDINATES)

DRAFTED BY: W.A.W. (N.J.)	SITE LOCATION MAP
CHECKED BY: H.S.	SUNOCO SERVICE STATION #0614-8506 6022 RAEFORD ROAD FAYETTEVILLE, NORTH CAROLINA
REVIEWED BY: E.H.	Groundwater & Environmental Services, Inc. 3344 HILLSBOROUGH STREET, SUITE 150, RALEIGH, NORTH CAROLINA, 27607
NORTH	SCALE IN FEET: 0 2000 / DATE: 2-25-09 / FIGURE: 1



LEGEND

- PROPERTY BOUNDARY
- FENCE
- CATCH BASIN
- UTILITY MANHOLE
- LIGHT POLE
- UTILITY POLE
- DRAIN
- MONITORING WELL
- ABANDONED MONITORING WELL
- UNDERGROUND SANITARY SEWER LINE
- UNDERGROUND STORM SEWER LINE
- UNDERGROUND ELECTRIC LINE
- UNDERGROUND GAS LINE
- OVERHEAD UTILITIES

DRAFTED BY: W.A.W. (N.J.)	SITE MAP
CHECKED BY: H.S.	SUNOCO SERVICE STATION #0614-8506 6022 RAEFORD ROAD FAYETTEVILLE, NORTH CAROLINA
REVIEWED BY: E.H.	Groundwater & Environmental Services, Inc. 3344 HILLSBOROUGH STREET, SUITE 150, RALEIGH, NORTH CAROLINA, 27607
NORTH	SCALE IN FEET (APPROXIMATE) 0 60 / DATE 3-23-09 / FIGURE 2

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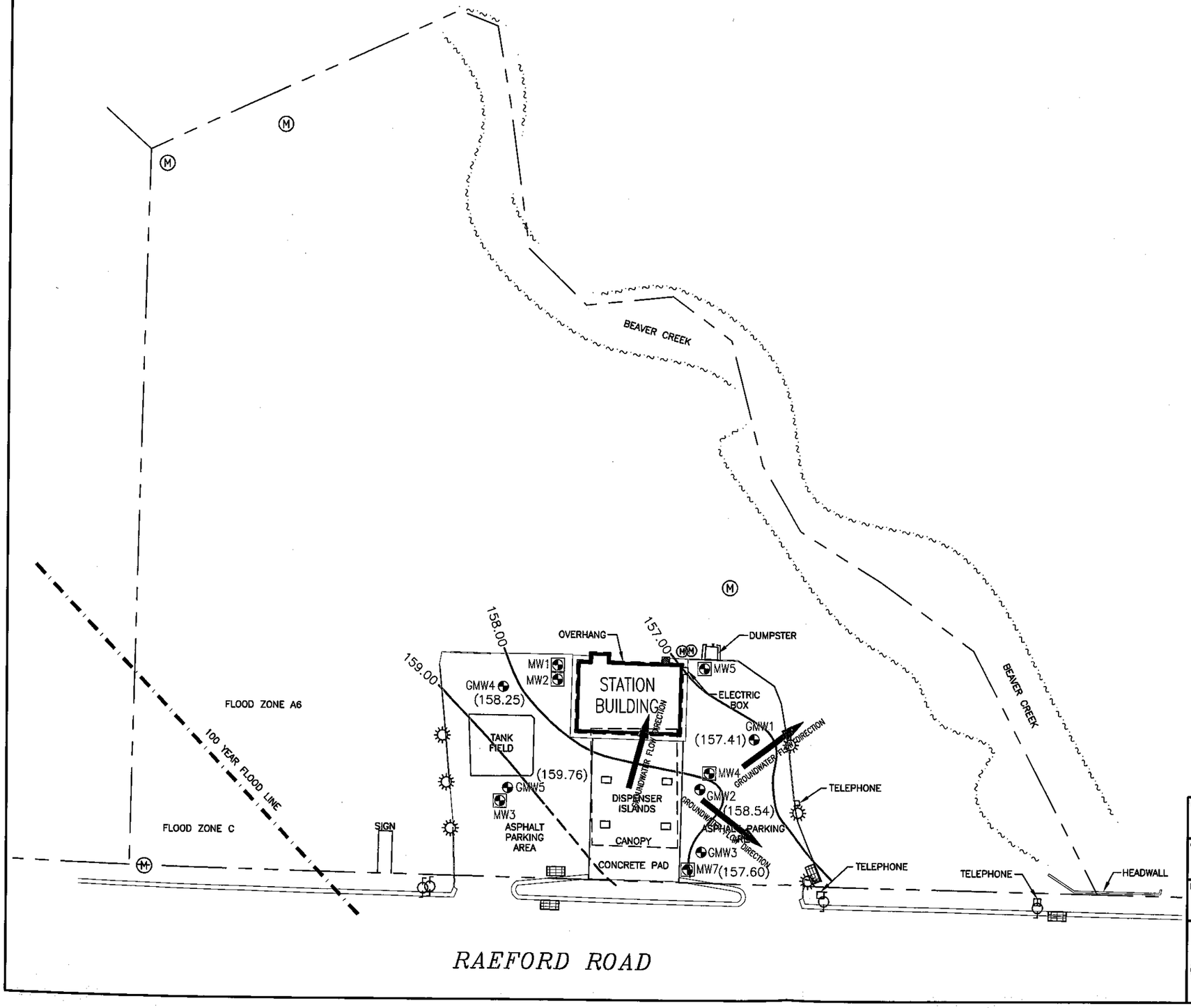

LEGEND

- PROPERTY BOUNDARY
- FENCE
- CATCH BASIN
- UTILITY MANHOLE
- LIGHT POLE
- UTILITY POLE
- DRAIN
- MONITORING WELL
- ABANDONED MONITORING WELL
- (158.54) GROUNDWATER ELEVATION (feet)
- 157.00 GROUNDWATER CONTOUR (feet) DASHED WHERE INFERRED

DRAFTED BY: W.A.W. (N.J.)	GROUNDWATER CONTOUR MAP FEBRUARY 10, 2009
CHECKED BY: H.S.	SUNOCO SERVICE STATION #0614-8506 6022 RAEFORD ROAD FAYETTEVILLE, NORTH CAROLINA
REVIEWED BY: E.H.	Groundwater & Environmental Services, Inc. 3344 HILLSBOROUGH STREET, SUITE 150, RALEIGH, NORTH CAROLINA, 27607
NORTH	SCALE IN FEET (APPROXIMATE) 0 60 / DATE 3-23-09 / FIGURE 3

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Table 1
Groundwater Elevation Summary
Sunoco DUNS #0614-8506
Fayetteville, North Carolina

Monitor Well I.D.	Gauging Date	Top of Casing Elevation (ft)	Depth to Water (ft BTOC)	Depth to Product (ft BTOC)	Product Thickness (ft)	Ground Water Elevation (ft)	Depth to Bottom (DTB)	Well Diameter (in)
GMW-1	2/10/2009	166.14	8.73	NA	NA	157.41	13.20	2
GMW-2	2/10/2009	166.12	7.58	NA	NA	158.54	12.77	2
GMW-3	2/10/2009	165.92	8.32	NA	NA	157.60	13.01	2
GMW-4	2/10/2009	166.28	8.03	NA	NA	158.25	12.97	2
GMW-5	2/10/2009	166.88	7.12	NA	NA	159.76	12.99	2

Notes: BTOC = Below Top of Casing

Table 2
Soil Monitoring and Analysis
Sunoco Retail Station DUNS #0416-8506
Fayetteville, North Carolina

Analytical Method				EPA 8260B						EPA 8270C	
Sample ID	Contaminant of Concern			Benzene	Toluene	Ethylbenzene	Total Xylene	Naphthalene	MTBE	Phenanthrene	Pyrene
	Date Collected	Sample Depth (BGS)	PID (PPM)								
Soil-to-Water MSCC (ug/Kg)				5.6	7,300	4,600	5,000	580	920	60,000	290,000
Industrial / Commercial MSCC (ug/Kg)				164,000	82,000,000	40,000,000	81,760,000	8,176,000	1,908,000	1,635,000	12,264,000
GMW-1	2/9/2009	5-7.5	483	**7.3**	ND	9.7	37.7	9.1	4.9	89.5J	146J
GMW-2	2/9/2009	7.5-10	83.1	2.2J	ND	ND	6.1J	5.8	ND	ND	ND
GMW-3	2/9/2009	7.5-10	16.5	ND	1.6J	ND	13.3	19.6	1.8J	305J	347J
GMW-4	2/9/2009	2.5-5	197	1.4J	ND	2J	10.3	1.2J	12.6	ND	ND
GMW-5	2/9/2009	2.5-5	36.7	**16**	5.4	8.4	87.7	ND	21.3	ND	ND

Notes:
All results reported in ug/Kg
BGS = Below ground surface
PPM = Parts per million
ND = Non-detect above laboratory reporting limits
J= Estimated concentration above the adjusted method detection limit and below adjusted reporting limit
Bold = Detection exceeds Soil-to-Water MSCC

Table 3
Groundwater Analysis
Sunoco Retail Station DUNS #0614-8506
Fayetteville, North Carolina

Analytical Method		EPA 8260B							8270C	
Well ID	Date	Benzene	Toluene	Ethylbenzene	Total Xylenes	BTEX	Naphthalene	MTBE	1-Methylnaphthalene	2-Methylnaphthalene
NC 2L Standard		1	1,000	550	530	NE	21	200	NE	14
GCL		5,000	257,500	84,500	87,500	NE	15,500	200,000	NE	12,500
GMW-1	2/10/2009	**873**	32	388	**1770**	3,063.4	**104**	**256**	ND	ND
GMW-2	2/10/2009	**166**	3.2	152	**675**	**996**	**121**	22	21.2J	**32.6J**
GMW-3	2/10/2009	.47J	0.39J	ND	2.4	2.4	2.4	1.9	ND	ND
GMW-4	2/10/2009	**59.7**	7.3	16.4	**283**	**366**	6.5	39.1	ND	ND
GMW-5	2/10/2009	**4.4**	1.7	0.43J	3.6	9.7	ND	2.2	ND	ND

Notes:
All results reported in ug/L
ND = Non-detect above laboratory reporting limits
NA = Not applicable
NE = Not established
SVOCs = Semi-Volatile Organic Compounds
Blue = Exceeds NC 2L Standard
Red = Exceeds NC GCL Standard

Soil Boring Log

Well ID: GMW-1

PROJECT INFORMATION

PROJECT:	**Sunoco Inc., Fayetteville, NC**
SITE LOCATION:	**6022 Raeford St.**
JOB NAME:	**DUNS #0614-8506**
LOGGED BY:	**Paul Goodell**
PROJECT MANAGER:	**Eli Holland**
DATES DRILLED:	**02/09/09**
WELL ID	**GMW-1**

DRILLING INFORMATION

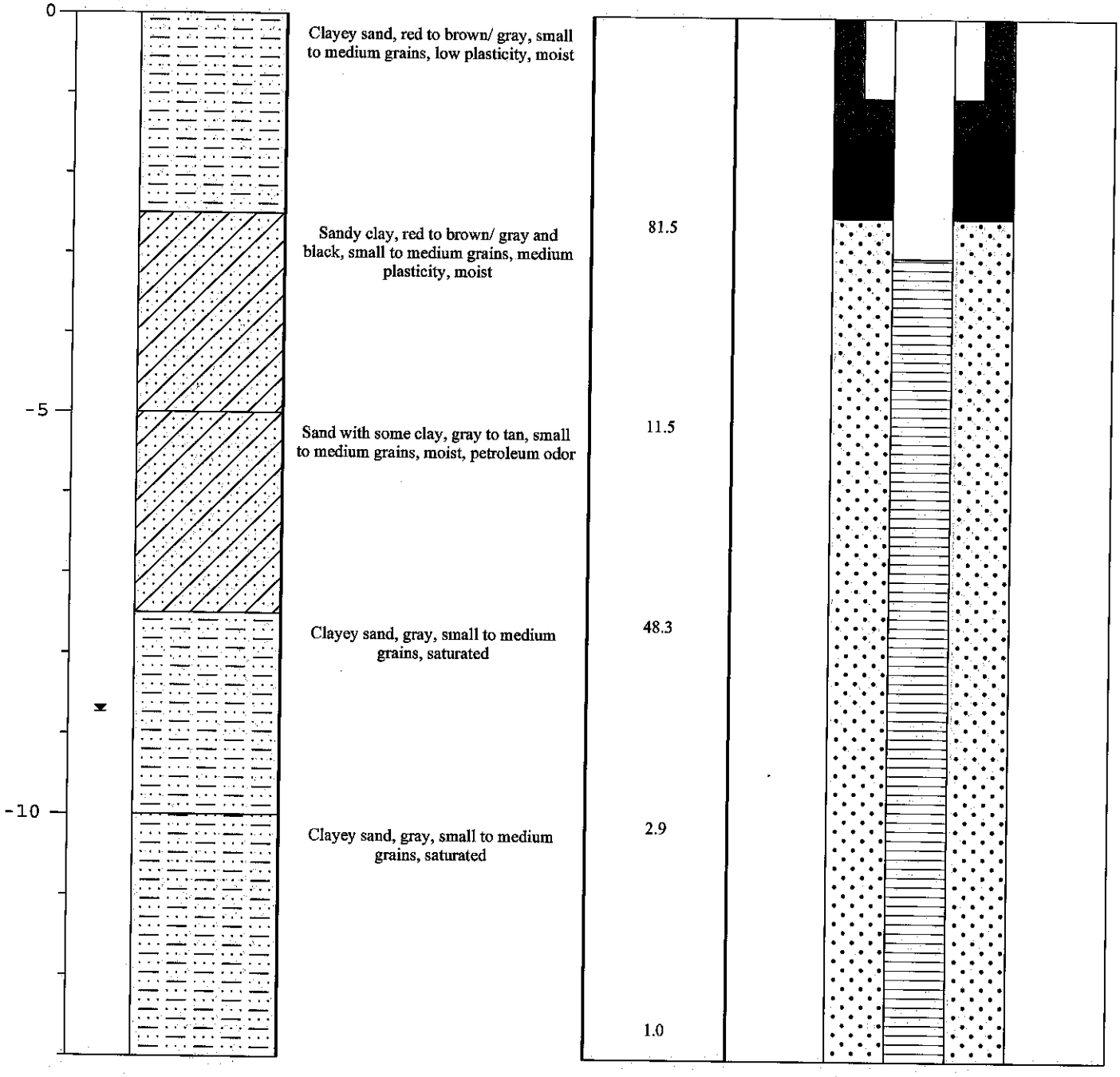
DRILLER:	**JD Barker**
BORING DEPTH:	**13 feet**
DRILLING CO.:	**Quantex, Inc.**
RIG TYPE:	**GeoProbe 7220**
METHOD OF DRILLING:	**Hollow-Stem Auger**
SAMPLING METHODS:	**2.5-foot grab**
HAMMER:	**NA**

NOTES:

▼ Observed Water Level

NM = Not Measured

VERTICAL DEPTH	SOIL/ROCK SYMBOLS	SOIL DESCRIPTION	PID (ppm)	WELL CONSTRUCTION
0		Clayey sand, red to brown/ gray, small to medium grains, low plasticity, moist		
		Sandy clay, red to brown/ gray and black, small to medium grains, medium plasticity, moist	81.5	
-5		Sand with some clay, gray to tan, small to medium grains, moist, petroleum odor	11.5	
		Clayey sand, gray, small to medium grains, saturated	48.3	
-10		Clayey sand, gray, small to medium grains, saturated	2.9	
			1.0	



Soil Boring Log

Well ID: GMW-2

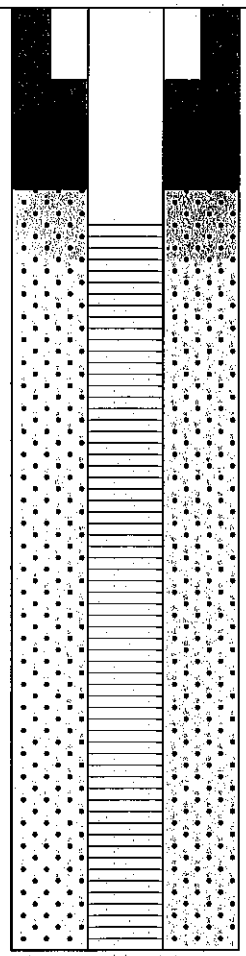
PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Sunoco Inc., Fayetteville, NC**	DRILLER:	**JD Barker**
SITE LOCATION:	**6022 Raeford St.**	BORING DEPTH:	**17.5 feet**
JOB NAME:	**DUNS #0614-8506**	DRILLING CO.:	**Quantex, Inc.**
LOGGED BY:	**Paul Goodell**	RIG TYPE:	**GeoProbe 7220**
PROJECT MANAGER:	**Eli Holland**	METHOD OF DRILLING:	**Hollow-Stem Auger**
DATES DRILLED:	**02/09/09**	SAMPLING METHODS:	**2.5-foot grab**
WELL ID	**GMW-2**	HAMMER:	**NA**

NOTES:

▼ Observed Water Level

NM = Not Measured

VERTICAL DEPTH	SOIL/ROCK SYMBOLS	SOIL DESCRIPTION	PID (ppm)	WELL CONSTRUCTION
0		Sand, red/ brown, small to medium grains, slightly moist		
		Sandy clay, red to brown gray, small to medium grains, medium plasticity, moist	2.5	
-5		Sand, gray/ brown, small to medium grains, moist	37.4	
	▼	Sand, gray/ brown, small to medium grains, moist, slight petroleum odor	8.4	
-10		Sand, gray/ brown, small to medium grains, moist, slight petroleum odor	83.1	
		Sand, gray/ brown, medium to large grains, moist	73.3	
-15		Sand, gray/ brown, medium to large grains, moist to saturated	1.8	
			11.3	



Soil Boring Log

Well ID: GMW-3

PROJECT INFORMATION

PROJECT:	**Sunoco Inc., Fayetteville, NC**
SITE LOCATION:	**6022 Raeford St.**
JOB NAME:	**DUNS #0614-8506**
LOGGED BY:	**Paul Goodell**
PROJECT MANAGER:	**Eli Holland**
DATES DRILLED:	**02/09/09**
WELL ID	**GMW-3**

DRILLING INFORMATION

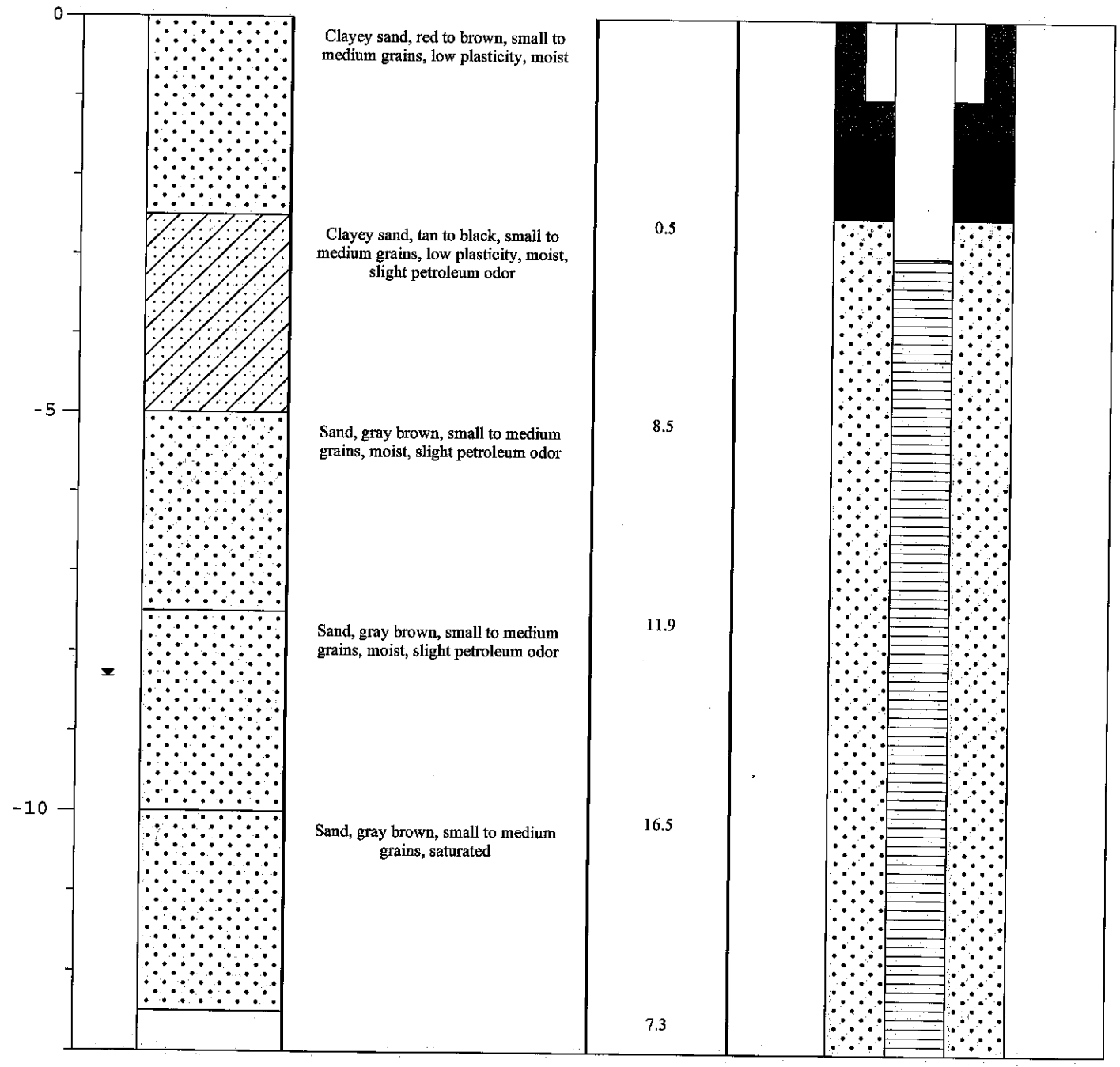
DRILLER:	**JD Barker**
BORING DEPTH:	**13 feet**
DRILLING CO.:	**Quantex, Inc.**
RIG TYPE:	**GeoProbe 7220**
METHOD OF DRILLING:	**Hollow-Stem Auger**
SAMPLING METHODS:	**2.5-foot grab**
HAMMER:	**NA**

NOTES:

▼ Observed Water Level

NM = Not Measured

VERTICAL DEPTH	SOIL/ROCK SYMBOLS	SOIL DESCRIPTION	PID (ppm)	WELL CONSTRUCTION
0		Clayey sand, red to brown, small to medium grains, low plasticity, moist		
		Clayey sand, tan to black, small to medium grains, low plasticity, moist, slight petroleum odor	0.5	
-5		Sand, gray brown, small to medium grains, moist, slight petroleum odor	8.5	
	▼	Sand, gray brown, small to medium grains, moist, slight petroleum odor	11.9	
-10		Sand, gray brown, small to medium grains, saturated	16.5	
			7.3	



Soil Boring Log

Well ID: GMW-4

PROJECT INFORMATION

PROJECT:	**Sunoco Inc., Fayetteville, NC**
SITE LOCATION:	**6022 Raeford St.**
JOB NAME:	**DUNS #0614-8506**
LOGGED BY:	**Paul Goodell**
PROJECT MANAGER:	**Eli Holland**
DATES DRILLED:	**02/09/09**
WELL ID	**GMW-4**

DRILLING INFORMATION

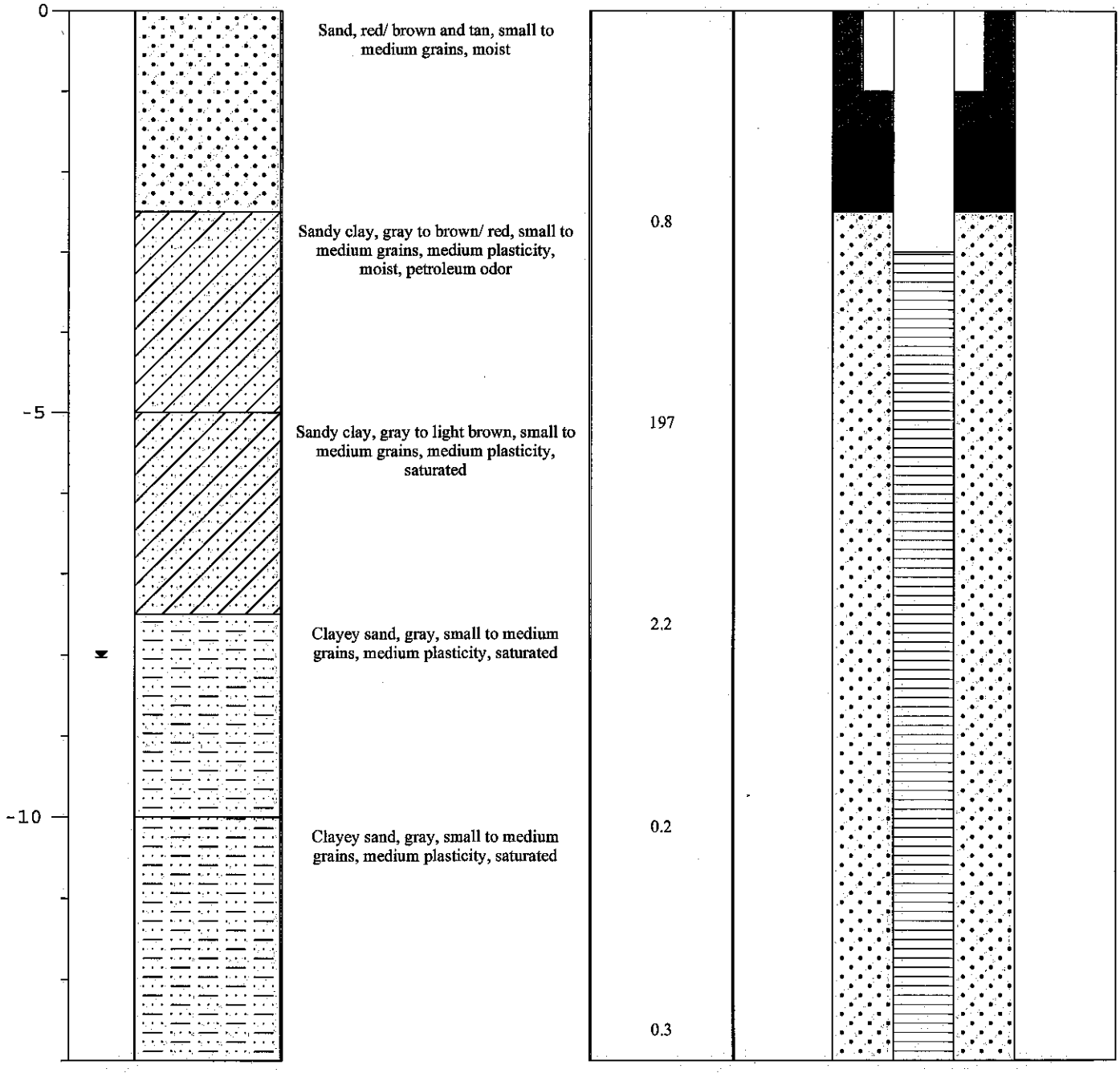
DRILLER:	**JD Barker**
BORING DEPTH:	**13 feet**
DRILLING CO.:	**Quantex, Inc.**
RIG TYPE:	**GeoProbe 7220**
METHOD OF DRILLING:	**Hollow-Stem Auger**
SAMPLING METHODS:	**2.5-foot grab**
HAMMER:	**NA**

NOTES:

▼ Observed Water Level

NM = Not Measured

VERTICAL DEPTH	SOIL/ROCK SYMBOLS	SOIL DESCRIPTION	PID (ppm)	WELL CONSTRUCTION
0		Sand, red/ brown and tan, small to medium grains, moist		
		Sandy clay, gray to brown/ red, small to medium grains, medium plasticity, moist, petroleum odor	0.8	
-5		Sandy clay, gray to light brown, small to medium grains, medium plasticity, saturated	197	
▼		Clayey sand, gray, small to medium grains, medium plasticity, saturated	2.2	
-10		Clayey sand, gray, small to medium grains, medium plasticity, saturated	0.2	
			0.3	



Soil Boring Log

Well ID: GMW-5

PROJECT INFORMATION

PROJECT:	**Sunoco Inc., Fayetteville, NC**
SITE LOCATION:	**6022 Raeford St.**
JOB NAME:	**DUNS #0614-8506**
LOGGED BY:	**Paul Goodell**
PROJECT MANAGER:	**Eli Holland**
DATES DRILLED:	**02/09/09**
WELL ID	**GMW-5**

DRILLING INFORMATION

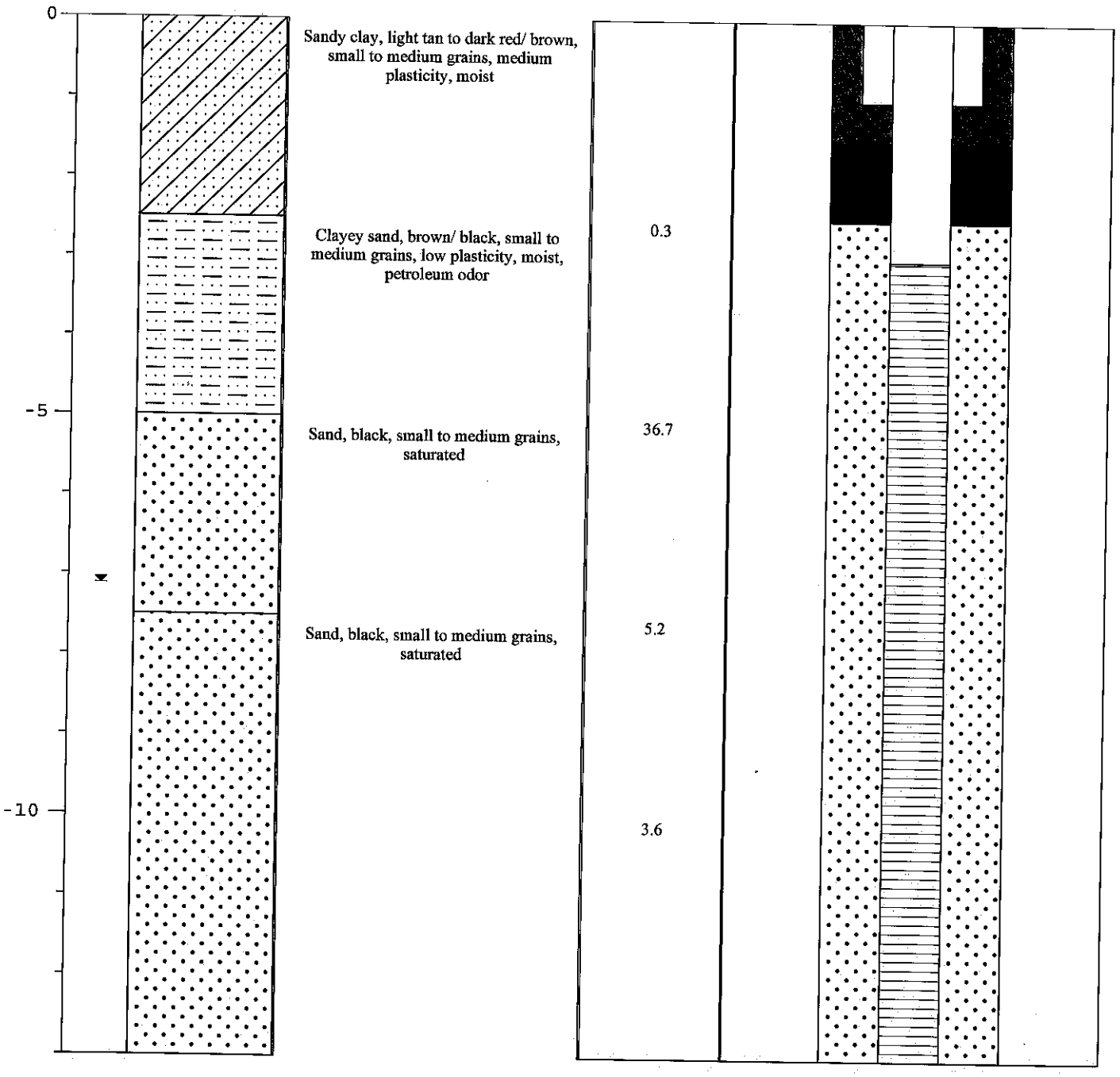
DRILLER:	**JD Barker**
BORING DEPTH:	**13 feet**
DRILLING CO.:	**Quantex, Inc.**
RIG TYPE:	**GeoProbe 7220**
METHOD OF DRILLING:	**Hollow-Stem Auger**
SAMPLING METHODS:	**2.5-foot grab**
HAMMER:	**NA**

NOTES:

▼ Observed Water Level

NM = Not Measured

VERTICAL DEPTH	SOIL/ROCK SYMBOLS	SOIL DESCRIPTION	PID (ppm)	WELL CONSTRUCTION
0		Sandy clay, light tan to dark red/ brown, small to medium grains, medium plasticity, moist		
		Clayey sand, brown/ black, small to medium grains, low plasticity, moist, petroleum odor	0.3	
-5		Sand, black, small to medium grains, saturated	36.7	
	▼	Sand, black, small to medium grains, saturated	5.2	
-10			3.6	



ATTACHMENT B

PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2016-265)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION: PARCEL 138 – JALARAM BAPA ENTERPRISES, LLC NCDOT PROJECT U-4405

6022 RAEFORD RD., FAYETTEVILLE, CUMBERLAND COUNTY, NC

NOVEMBER 4, 2016

Report prepared for: Mike Branson
Solutions, IES
1101 Nowell Road
Raleigh, North Carolina 27607

Prepared by: _____
Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____
Douglas A. Canavello, P.G.
NC License #1066

503 INDUSTRIAL AVENUE, GREENSBORO, NC 27406
P: 336.335.3174 F: 336.691.0648
C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 138 – 6022 Raeford Road
Fayetteville, Cumberland County, North Carolina

Table of Contents

Figures

LIST OF ACRONYMS

CADD	Computer Assisted Drafting and Design
DF	Dual Frequency
EM	Electromagnetic
GPR	Ground Penetrating Radar
GPS	Global Positioning System
NCDOT	North Carolina Department of Transportation
ROW	Right-of-Way
SVE	Soil Vapor Extraction
UST	Underground Storage Tank

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Solutions, IES (Solutions) at Parcel 138, located at 6022 Raeford Road, Fayetteville, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-4405). Solutions directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to extend from the existing edge of pavement to the proposed ROW lines and/or easement lines within the property, whichever distance was greater. Conducted from October 12-17, 2016, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Geophysical Results: A known UST bed was located on the west side of the property, north of the geophysical survey area. All EM anomalies were directly attributed to visible cultural features and known utilities. A GPR survey was not required. Collectively, the geophysical data did not show any evidence of unknown metallic USTs at Parcel 138.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Solutions, IES (Solutions) at Parcel 138, located at 6022 Raeford Road, Fayetteville, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-4405). Solutions directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to extend from the existing edge of pavement to the proposed ROW lines and/or easement lines within the property, whichever distance was greater. Conducted from October 12-17, 2016, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included an active service station building with a pump island and canopy surrounded by asphalt parking areas and grass medians. A known UST bed was located on the west side of the property, north of the geophysical survey area. Aerial photographs showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

The geophysical investigation consisted of an electromagnetic (EM) induction-metal detection survey. Pyramid collected the EM data using a Geonics EM61 metal detector integrated with a Trimble AG-114 GPS antenna. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. The EM61 data were digitally collected at

approximately 0.8 foot intervals along north-south trending or east-west trending, generally parallel survey lines spaced five feet apart. The data were downloaded to a computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 11.0 software programs.

GPR data were not required at this property due to all EM anomalies being directly attributed to visible cultural features at the ground surface or known utilities (see Discussion of Results below).

Pyramid's classifications of USTs for the purposes of this report are based directly on the geophysical UST ratings provided by the NCDOT. These ratings are as follows:

Geophysical Surveys for Underground Storage Tanks
on NCDOT Projects

High Confidence	Intermediate Confidence	Low Confidence	No Confidence
Known UST Active tank - spatial location, orientation, and approximate depth determined by geophysics.	**Probable UST** Sufficient geophysical data from both magnetic and radar surveys that is characteristic of a tank. Interpretation may be supported by physical evidence such as fill/vent pipe, metal cover plate, asphalt/concrete patch, etc.	**Possible UST** Sufficient geophysical data from either magnetic or radar surveys that is characteristic of a tank. Additional data is not sufficient enough to confirm or deny the presence of a UST.	Anomaly noted but not characteristic of a UST. Should be noted in the text and may be called out in the figures at the geophysicist's discretion.

DISCUSSION OF RESULTS

Discussion of EM Results

A contour plot of the EM61 results obtained across the survey area at the property is presented in **Figure 2**. Each EM anomaly is numbered for reference in the figure. The following table presents the list of EM anomalies and the cause of the metallic response, if known:

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Sign/Light Pole	
2	Drop Inlet and Storm Pipe	
3	Phone/Light Poles	
4	Phone Booth/Light Pole	
5	Vehicles	
6	Dumpster	
7	Manholes	

All of the EM anomalies recorded by the survey are directly attributed to visible cultural features such as signs, posts, a phone booth, vehicles, a drop inlet, storm pipes, manholes and a dumpster. For this reason, a GPR survey was not required to verify any unknown EM anomalies.

Collectively, the geophysical data did not show any evidence of unknown metallic USTs at Parcel 138. A known UST bed was located on the west side of the property, north of the geophysical survey area.

SUMMARY & CONCLUSIONS

Our evaluation of the EM61 collected at Parcel 138 in Fayetteville, Cumberland County, North Carolina, provides the following summary and conclusions:

- The EM61 survey provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- A known UST bed was located on the west side of the property, north of the geophysical survey area.
- All EM anomalies were directly attributed to visible cultural features and known utilities. A GPR survey was not required.

- Collectively, the geophysical data did not show any evidence of unknown metallic USTs at Parcel 138.

LIMITATIONS

Geophysical surveys have been performed and this report was prepared for Solutions, IES in accordance with generally accepted guidelines for EM61 surveys. It is generally recognized that the results of the EM61 surveys are non-unique and may not represent actual subsurface conditions. The EM61 results obtained for this project have not conclusively determined the definitive presence or absence of metallic USTs, but the evidence collected is sufficient to result in the conclusions made in this report. Additionally, it should be understood that areas containing extensive vegetation, reinforced concrete, or other restrictions to the accessibility of the geophysical instruments could not be fully investigated.

N↑

APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA

View of Survey Area
(Facing Approximately West)

View of Survey Area
(Facing Approximately North)

TITLE
PARCEL 138 - GEOPHYSICAL SURVEY
BOUNDARIES AND SITE PHOTOGRAPHS

PROJECT
6022 RAEFORD ROAD
FAYETTEVILLE, NORTH CAROLINA
NCDOT PROJECT U-4405

Pyramid Geophysics
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE	10/31/16	CLIENT	SOLUTIONS, IES
PYRAMID PROJECT #:	2016-265		**FIGURE 1**

N↑

EM61 METAL DETECTION RESULTS

NUMBERS IN BLUE (x) CORRESPOND TO ANOMALY TABLE INCLUDED IN THE REPORT

NO EVIDENCE OF UNKNOWN METALLIC USTs OBSERVED

The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM61 data were collected on October 13, 2016, using a Geonics EM61 instrument. GPR verification data were not required due to all EM anomalies being directly attributed to visible cultural features.

EM61 Metal Detection Response (millivolts)

TITLE	PARCEL 138 - EM61 RESULTS CONTOUR MAP
PROJECT	6022 RAEFORD ROAD FAYETTEVILLE, NORTH CAROLINA NCDOT PROJECT U-4405

Pyramid Geophysics

503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE	10/26/2016	CLIENT	SOLUTIONS, IES
PYRAMID PROJECT #:	2016-265		**FIGURE 2**

ATTACHMENT C

Solutions-IES
Industrial & Environmental Services

Log of Boring 138-SB-1

BORING LOCATION: Parcel #138, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/27/2016 — DATE FINISHED: 10/27/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 12 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS
0–4		100%	0.2, 0.6	Tan and red mottled silty sand. Dry.
4–6	138-SB-1-4-6	100%	0.6	Tan and red mottled silty sand. Dry.
6–8		100%	NA	Tan and red mottled silty sand. Saturated.
8–10		100%	NA	Tan and red mottled silty sand. Saturated.
10–12			NA	Tan and red mottled silty sand. Saturated.

End of Boring

NA - Not Available, PID reading not collected.

Solutions-IES
Industrial & Environmental Services

Log of Boring 138-SB-2

BORING LOCATION: Parcel #138, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/27/2016 — DATE FINISHED: 10/27/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 12 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS
0				Asphalt.
1			0.6	
2	138-SB-2-2-4	100%		
3			6.7	Tan and red mottled silty sand. Dry.
4	138-SB-2-4-6			
5			38.7	
6		100%		
7			0.5	
8				
9			9.5	Tan and red mottled silty sand. Saturated.
10		100%		
11			11.6	
12				End of Boring

NA - Not Available, PID reading not collected.

Solutions-IES
Industrial & Environmental Services

Log of Boring 138-SB-3

BORING LOCATION: Parcel #138, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/27/2016 — DATE FINISHED: 10/27/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 6 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0				Asphalt.	0
1		100%	NA		1
2	138-SB-3-2-4				2
3			NA	Tan and red mottled silty sand. Dry.	3
4	138-SB-3-4-6	100%			4
5			NA		5
6					6

End of Boring

NA - Not Available, PID reading not collected.

Solutions-IES
Industrial & Environmental Services

Log of Boring 138-SB-4

BORING LOCATION: Parcel #138, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/27/2016 — DATE FINISHED: 10/27/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 6 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0				Asphalt.	0
1		100%	NA		1
2	138-SB-4-2-4				2
3			NA	Tan and red mottled silty sand. Dry.	3
4	138-SB-4-4-6	100%			4
5			NA		5
6					6

End of Boring

NA - Not Available, PID reading not collected.

Solutions-IES
Industrial & Environmental Services

Log of Boring 138-SB-5

BORING LOCATION: Parcel #138, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/27/2016 — DATE FINISHED: 10/27/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 6 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0				Asphalt.	0
1		100%	NA		1
2	138-SB-5-2-4				2
3			NA	Tan and red mottled silty sand. Dry.	3
4	138-SB-5-4-6	100%			4
5			NA		5
6					6

End of Boring

NA - Not Available, PID reading not collected.

Solutions-IES
Industrial & Environmental Services

Log of Boring 138-SB-6

BORING LOCATION: Parcel #138, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/27/2016 — DATE FINISHED: 10/27/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 6 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0					0
1			NA		1
2	138-SB-6-2-4	100%			2
3			NA	Tan and red mottled silty sand. Dry.	3
4	138-SB-6-4-6				4
5		100%	NA		5
6					6

End of Boring

NA - Not Available, PID reading not collected.

ATTACHMENT D

PHOTO 1 - VIEW OF BORING LOOKING SOUTH

PHOTO 2 - VIEW OF BORING LOOKING NORTHEAST

PHOTO 3 - VIEW OF BORING LOOKING SOUTHEAST

PHOTO 4 - VIEW OF BORING LOOKING SOUTHEAST

PHOTO 5 - VIEW OF BORING LOOKING NORTHEAST

PHOTO 6 - VIEW OF BORING LOOKING NORTHWEST

ATTACHMENT E

QED

REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: Parcel 138: 6022 Raeford Road
Fayetteville, NC

Samples taken 10/27/2016
Samples extracted 10/27/2016
Samples analysed 10/27/2016

Contact:

Operator Candy Elliott

Project: 2016.0054.NDOT

U04049

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	138-SB-1-4-6	23.2	<0.58	1.7	40.8	42.5	34	3.5	0.11	5.1	79.4	15.6	Road Tar (FCM) 80.8%
s	138-SB-2-2-4	24.1	<0.6	<0.6	2.9	2.9	1.7	0.07	<0.002	0	94.7	5.3	Deg.Fuel (FCM) 75.8%
s	138-SB-2-4-6	26.7	<0.67	0.84	**59.7**	60.5	27.1	1.1	0.009	3	93.7	3.2	Deg.Fuel (FCM) 92.8%
s	138-SB-3-2-4	23.2	<0.58	<0.58	**52**	52	38.8	1.6	0.017	0	86.5	13.5	V.Deg.PHC (FCM) 68.1%
s	138-SB-3-4-6	24.1	<0.6	<0.6	33.7	33.7	18.2	0.82	0.009	0	84.5	15.5	V.Deg.PHC (FCM) 68.9%
s	138-SB-4-2-4	25.2	<0.63	1.2	5.3	6.5	4.4	0.45	0.013	23.2	59.8	17	Deg.PHC (FCM) 69.4%
s	138-SB-4-4-6	22.5	<0.56	<0.56	17.8	17.8	7.9	0.38	0.004	0	85.1	14.9	V.Deg.PHC (FCM) 82.5%
s	138-SB-5-2-4	31.1	<1.6	<0.78	<0.78	<0.78	<0.16	<0.02	<0.003	0	0	100	
s	138-SB-5-4-6	29.4	<0.73	<0.73	0.73	0.73	0.6	0.07	<0.003	0	53.2	46.8	Residual.PHC (FCM) 63.1%
s	138-SB-6-2-4	24.8	<0.62	2.1	0.62	2.72	0.32	<0.02	<0.002	88.3	3.1	8.6	V.Deg.Gas (FCM) 49.4%
s	138-SB-6-4-6	23.5	<0.59	<0.59	1.6	1.6	1.3	0.15	<0.002	0	74.1	25.9	Deg.PHC (FCM) 68.3%
	Initial Calibrator QC check			OK						Final FCM QC Check		OK	99.7 %

Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

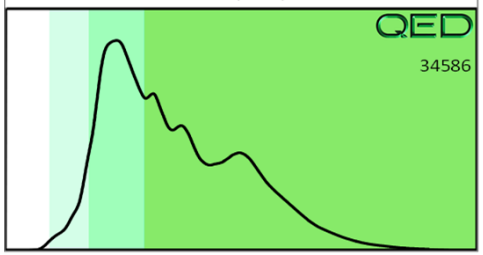
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

QED Hydrocarbon Fingerprints

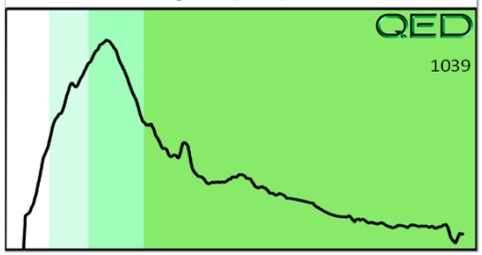
Project: 2016.0054.NDOT

10/27/2016

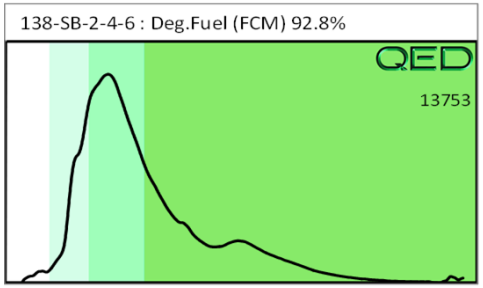
138-SB-1-4-6 : Road Tar (FCM) 80.8%



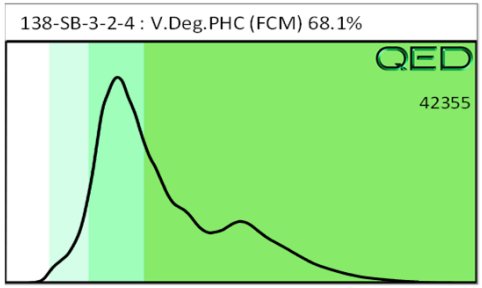
138-SB-2-2-4 : Deg.Fuel (FCM) 75.8%



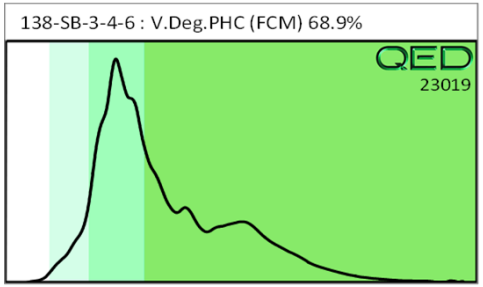
138-SB-2-4-6 : Deg.Fuel (FCM) 92.8%



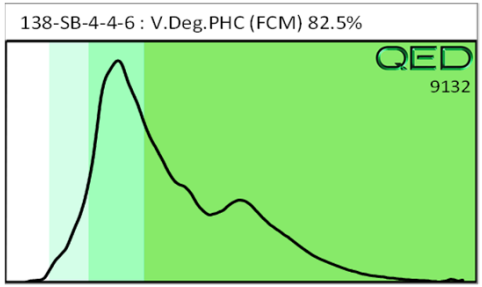
138-SB-3-2-4 : V.Deg.PHC (FCM) 68.1%



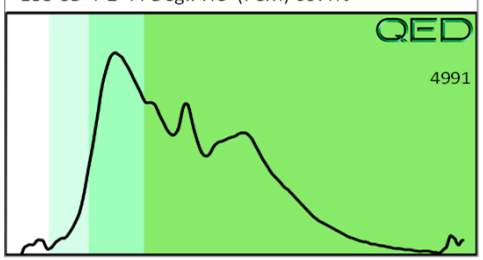
138-SB-3-4-6 : V.Deg.PHC (FCM) 68.9%



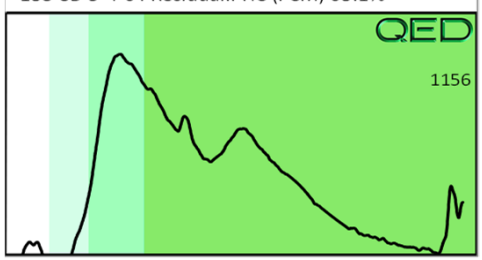
138-SB-4-4-6 : V.Deg.PHC (FCM) 82.5%



138-SB-4-2-4 : Deg.PHC (FCM) 69.4%



138-SB-5-4-6 : Residual.PHC (FCM) 63.1%



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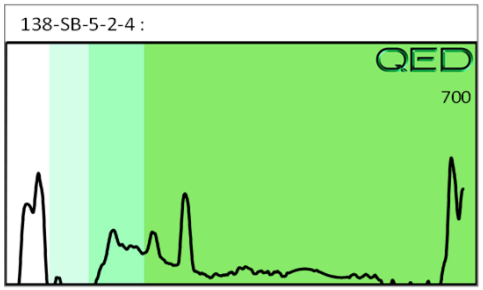
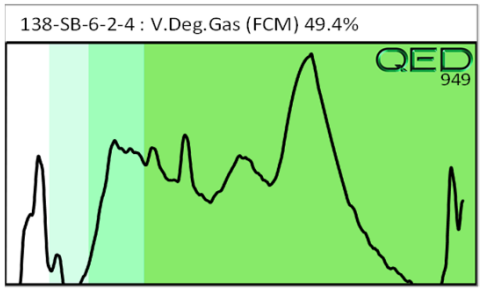


138-SB-6-2-4 : V.Deg.Gas (FCM) 49.4%



138-SB-6-4-6 : Deg.PHC (FCM) 68.3%